

WEEKLY SOUTHERN INDUSTRIAL RAILROAD TO FINANCIAL NEWSPAPER.

HELP WANTED SITUATIONS WANTED

published free of charge in the MANUFACTURERS' RECORD. Such advertisements must not exceed four lines, or about twenty-five words, and four consecucharge. Replies addressed in our care will be for warded to advertisers. The extended circulation of the MANUFACTURERS' RECORD and the care with which its pages are read make this opportunity one of exceptional value. We offer it freely to our patrons and friends, and ask them to make liberal use of it.

\$4.00 per year.

Single Gopy

10 Gents

Baltimore, October 28, 1892.

VOL.XXII.



THE JAMES SMITH WOOLEN MACHINERY CO.

WOOLEN MACHINERY AND CARD CLOTHING OF EVERY DESCRIPTION, SHAFTING, HANGERS, PULLEYS AND FRICTION CLUTCHES.

Hub Friction Clutch Pulleys will run 1,000 Revolutions. Made in sizes from 2 up to 1 of More than ten thousand



Two handsome photo-engraved display sheets e "RECENT IMPROVEMENTS IN AIR COMPRESSORS," "RECENT IMPROVEMENTS IN ROCK DRILLS,"

THE INGERSOLL-SERGEANT DRILL CO., No. 10 PARK PLACE, NEW YORK.

The BROWN HOISTING & CONVEYING MACHINE CO., CLEVELAND, OHIO, U. S. A.

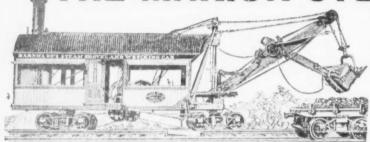
MANUPACTURERS AND SOLE PROPRIETORS OF THE PATENTS, APPLICATIONS AND DESIGNS UNDER WHICH THE BROWN HOISTING AND CONVEYING APPARATUS AND VARIOUS TRAMWAYS FOR IT ARE BUILT.

MEW AND COMPLETE LABOR-SAVING SYSTEMS FOR HANDLING OF MATERIALS OF ALL KINDS. MACHINERY SPECIALLY ADAPTED FOR HANDLING PHOSPHATE.

Cable Tramway System. Suspended Beam Tramway System
Bridge Tramway System.

Shed Tramway System. Warehouse Tramway System. Sewer Machine Tramway System. Continuous Elevated Tramway System

THE MARION STEAM SHOVEL CO. MANUFACTOR THE MARION STEAM SHOVEL CO. MANUFACTOR THE MARION STEAM SHOVEL CO. MANUFACTOR THE MARION STEAM SHOVEL CO.



Marion Steam Shovel Co.

Marion, Ohio. BARNHART'S BALLAST UNLOADER. No center rib or leader is required



HE SOUTHERN SAW MFG. CO.

OUR INSERTED TOOTH SAWS have been thoroughly tested on all feed and in all kinds of timber. Saw mill men concede it to be the strongest and

Attention Given to All Kinds of Repair Work and Satisfaction Guaranteed,
Write for Catalogue and Prices,



Soap Makers' 👼 Butchers' Machinery,

462 Ellicott Street, Buffalo, New York, U. S. A.

Foot Lever Soap Presses, Nos. 1 and 2. Combination Steam Power Soap Presses. Improved Soap Remeiting either with or without 8 Horse Power Engine attached. Steam Jacket Kettles. Steamed Jacketed Tolict Soap Particletes, Iron Soap Cutting Frames, will



DESCRIPTION BY THE HARRINGTON KING PERFORATING &

EASTERN OFFICE, No. 284 PEARL STREET, Cor. Beekman, NEW YORK.



CARS,

Easy Terms.



EQUIPMENT and **SUPPLIES**

Electric, Street and Suburban

ROADS.

BOTH NEW AND SECOND-HAND. Whether you wish to BUY or SELL. WRITE US.

Clean Your Boiler Tubes with Abrams Expansion Flue Brush, Write ST. LOUIS STEEL WIRE BRUSH CO.



CLASSIFIED INDEX ADVERTISERS. OF

FOR "ALPHABETICAL INDEX" SEE PAGE 46.

Acid Chambers.
Charleston Lead Co., Charleston, S. C. Herman Poole, New York, N. Y. Valk & Murdoch Iron Works, Charleston, S. C.

Valk & Murdoch Iron Works, Charleston, S. C. Alr Compressors.

M. C. Bullock, Mfg. Co., Chicago, Ill. Ingersoll-Sergeant Rock D. Co., New York, N.Y. Morris Machine & Iron Co., Dover, N. J. Rand Drill Co., New York, N. Y. Sullivan Machinery Co., Chicago, Ill.

Anti-Friction Metals. [See Phosphor-Paul S. Reeves, Philadelphia, Pa. Amer. Imp. Anti-Friction Metal Co., Mobile, Ala.

Amer. Imp. Anti-Friction Metal Co., M.
Architects.
Collins & Hackett, Staunton, Va.
Edward Barrath & Co., Chicago, Ill.
Teague & Mayre, Newport News, Va.
A. G. Bauer, Raleigh, N. C.
Gustaf Bottiger, Winston, N. C.
D. G. Zeigler, Charleston, S. C.
Charles H. Read, Richmond, Va.
Wilson & Huggins, Roanoke, Va.
Griswold & Nunan, Owensboro, Ky.
C. R. Makepeace & Co., Providence,
Lockwood, Greene & Co., Boston, Ma
Drew, Baldwin & Co., New York, N.
Architectural Iron Work.

Architectural Iron Work. Architectural Iron Work,
E. M. Hopkins, Savannah, Ga.
Toledo Wire & Iron Works, Toledo, O.
Toledo Cornice Works, Toledo, O.
Cushman Iron Co., Roanoke, Va.
Champion Iron Co., Kenton, O.
J. E. Bolles & Co., Detroit, Mich.
Fred. J. Meyers Mfg. Co., Covington, Ky.
T. H. Brooks & Co., Cleveland, O.
P. Duvinage & Co., Brooklyn, N. Y.

Artesian Well Tools and Supplies. |See

Babbitt Metal. [See Anti-Friction Metal.]

Bankers and Brokers.

Bankers and Brokers,
N. W. Harris & Co., Chicago, Ill.
L. Breckinridge Cabell, New York, N. Y.
Godfrey & Train, New York, N. Y.
Hopkins, Dwight & Co., New York, N. Y.
Edward Morton & Co., New York, N. Y.
Exchange Banking & Trust Co., Charleston
von Hemert & Co., Roanoke, Va.
John L. Williams & Son, Richmond, Va.
Middendorf, Oliver & Co., Baltimore, Md.

Barrel Machinery. [See Woodworking Ma-

chinery.]
Crescent Mfg. Co., Cleveland, O.
E. & B. Holmes, Buffalo, N. V.

Bath Tubs. Haines, Jones & Cadbury Co., Philadelphia, Pa.

Bearings.
N. American Metal. Co., Long Island City, N. Y.

N. American Metal. Co., Long Island City, S. F.
Belting.
N. Y. Belt. & Pack. Co., Ltd., New York, N. Y.
E. M. Freese & Co., Galion, O.
Cameron & Barkley Co., Charleston, S. C.
Henry Popham & Son, East Newark, N. J.
Main Belting Co., Philadelphia, Pa.
Chesapeake Belting Co., Baltimore, Md.
Gandy Belting Co., Baltimore, Md.
Shultz Belting Co., St. Louis, Mo.
Smith-Courtney Co., Richmond, Va.
H. W. Caldwell & Son Co., Chicago, Ill.
American Supply Co., Providence, R. I.
Belting. (Chain.)

H. W. Caldwell & Son Co., Chicago, Ill.
F. H. C. Mey, Buffalo, N. V.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineer'g Co., Nicetown (Phila.), Pa.

Belt Lacing.
American Supply Co., Providence, R. I.
Henry Popham & Son, East Newark, N. J.
Shultz Belting Co., St. Louis, Mo.
Bristol's Mfg. Co., Waterbury, Conn.

Blinds. Adams & Woodson, Lynchburg, Va. Monroe Mfg. Co., Lima, O.

Blowers and Exhaust Fans. West & Branch, Richmond, Va.
Davidson Ventilating Fan Co., Boston, Mass.
Geo. P. Clark, Windsor Locks, Conn.
B. F. Sturtevant Co., Boston, Mass.

Boiler Compound. Kehrhahn & Co., Baltimore, Md. H. H. Mansfield, New York, N. Y.

Boiler Fronts and Fittings. [See Boilers.] Vulcan Iron Works Co., Toledo, O.

Vulcan Iron Works Co., Toledo, O.

Bollers. [See Machinery.]
Avery Supply Co., Louisville, Ky.
Aultman & Taylor Machinery Co., Mansfield, O.
S. C. Forsaith Machine Co., Manchester, N. H.
Delbert Engineering Co., Ltd., New Orleans, La.
W. C. Leffel Co., Springfield, O.
John E. Beggs Mch. & Sup. Co., New York, N. Y.
Golley & Finley Iron Works, Lima, O.
Ravenna Boiler Works, Ravenna, O.
J. H. McEwen Mfg. Co., Ridgway, Pa.
New York Central Iron Wks. Co., Geneva, N. Y.
Cameron & Barkley Co., Charleston, S. C.

Holyoke St. Boiler & Iron Wks., Holyoke, Mass.
Geo. M. Clapp, New York.
Cline Engine & Machine Co., Plymouth, O.
Harrisburg Fdy. & Mch. Works, Harrisburg, Pa.
American Well Works, Aurora. Ill.
Bass Foundry & Mch. Works, Ft. Wayne, Ind.
Geo. R. Lombard & Co., Augusta, Ga.
Geo. J. Fritz, St. Louis, Mo.
Chandler & Taylor Co., Indianapolis, Ind.
Enterprise Boiler Co., Youngstown, O.
Taylor Engine Co., Chambersburg, Pa.
West & Branch, Richmond, Va.
H. P. Edmond, Richmond, Va.
Struthers, Wells & Co., Warren, Pa. H. P. Edmond, Richmond, Va.
Struthers, Wells & Co., Warren, Pa.
Babcock & Wilcox Co., New York, N. Y.
H. Dudley Coleman Mch. Co., Ltd., New Orleans,
Greer Machinery Co., Knoxyille, Tenn.
N. Y. Safety Steam Power Co., New York, N. Y.
Buckeye Engine Co., Salem, O.
Stearns Mfg. Co., Erie, Pa.
Smith-Courtney Co., Richmond, Va.
Skinner Engine Co., Erie, Pa.
Talbott & Sons, Richmond, Va.
Jas. Leffel & Co., Springfield, O.
Cleveland & Hardwick, Erie, Pa.
Dan Sbea & Co., Memphis, Tenn. Cleveland & Hardwick, Erie, Pa.
Dan Shea & Co., Memphis, Tenn.
Oil Well Supply Co., Pittsburg and New York.
Tudor Boiler Mfg. Co., Cincinnatt, O.
Valk & Murdoch Iron Works, Charleston, S. C.
Frick Co., Waynesboro, Pa.
Sharon Boiler Works, Limited, Sharon, Pa.
Geo. W. Tifft, Sons & Co., Buffalo, N. Y.
Webster, Camp & Lane Machine Co., Akron, O.
S. D. Warfield Co., Baltimore, Md.
Valley Iron Works, Williamsport, Pa.

Boller Appliances.

Sherwood Mfg. Co., Buffalo, N. Y. Hine & Robertson, New York, N. Y. Penberthy Injector Co., Detroit, Mich. Jenkins Bros., New York, N. Y.

Bolt and Nut Machinery. National Machinery Co., Tiffin, O.

Bolts. (Expansion.) Isaac Church, Toledo, O.

Bolts, Rivets and Nuts.

Milton Mfg. Co., Milton, Pa. Pennsylvania Steel Co., Steelton, Pa. Hoopes & Townsend, Philadelphia, Pa.

Washington Hy. P. Brick Co., Washington, D. C. Coaldale Brick & Tile Co., Birmingham, Ala Brick and Clayworking Machinery

Brick and Clayworking Machinery and Supplies.
Central Machine Works, Cleveland, O.
F. H. C. Mey, Buffalo, N. V.
Kells & Sons, Adrian, Mich.
George Carnell, Philadelphia, Pa.
Walworth Run Fdy. & Mfg. Co., Cleveland, O.
P. L. Sword & Son, Cleveland, O.
C. & A. Potts & Co., Indianapolis, Ind.
Anderson Fdy. & Mch. Wks., Anderson, Ind.
H. Brewer & Co., Tecumsch, Mich.
E. M. Freese & Son, Galion, O.
J. W. Penfield & Son, Willoughby, O.

E. M. Freese & Son, Gailon, O.
J. W. Penfield & Son, Willoughby, O.
Frey-Sheckler Co., Bucyrus, O.
Chambers Bros. Co., Philadelphia, Pa.
Fletcher & Thomas, Indianapolis, Ind
C. W. Raymond & Co., Dayton, O.

Bridges. Fringes.
S. W. Frescoln, New York, N. Y.
American Bridge & Iron Co., Roanoke, Va.
Pennsylvania Steel Co., Steelton, Pa.

BulldIng Papers.

Ehret-Warren Mfg. Co., St. Louis, Mo.

Texas Coal Tar & Asphaltum Co., Dallas, Tex.

Business Opportunities.

Business Opportunities,
George T. Bason and Hamilton E. Jones, Trustees, Charlotte, N. C.
A. A. Scott, Lakeland, Fla.
M. F. Whatton, Luray, Va.
Irwin Tucker, Newport News, Va.
R. M. Foster, Gallatin, Tenn.
M. V. Richards, Land and Immigration Agent M. V. Richards, Land and Immigration Age Baltimore & Ohio Railroad, Baltimore, Md. "Knitting Mill." Pittsboro, N. C. A. T. Burr, Jr., Danville, Va. "A. W. Z.," Charleston, S. C. McClure & Maswell, Knoxville, Tenn. R. F. Moss, Booker, Va. T. H. Sampson, New Orleans, La. P. Duvinage & Co., Brooklyn, N. V. Planing Mill, care MANUPACTURERS' RECORD

Canning Machinery.

Daniel G. Trench & Co., Chicago, Ill.

S. D. Warfield Co., Baltimore, Md.

Niagara Stamping & Tool Co., Buffalo, N. Y.

A. K. Robbins, Baltimore, Md.

Cans. (Fruit and Vegetable.)
Daniel G. Trench & Co., Chicago, Ill.

Card Clothing.
Smith, Saunders & Collins, Newton, N. C.
American Supply Co., Providence, R. I.
Brown & King Supply Co., Atlanta, Ga.
James Smith Woolen Mch. Co., Philadelphia, Pa.
Waters & Garland, Louisville, Ky.

Cars. [See Railroad Equipment and Supplies.]

Paul S. Reeves, Philadelphia, Pa.

CastIngs. (Iron.)
Haight & Clark, Albany, N. Y.
Glamorgan Co., Lynchburg, Va.
Chattanooga Fdy, & P.Wks., Chattanooga, Tenn.
Howard-Harrison Iron Co., Bessemer, Ala.
Vulcan Iron Works Co., Toledo, O.
Todd Pulley & Shafting Works, E. St. Louis, III.
Struthers, Wells & Co., Warren, Pa.
Manly Machine Co., Dalton, Ga.
Walker Mfg. Co., Cleveland, O.
Malker Mfg., Co., Cleveland, O.
CastIngs. (Malleghle Iron and Street)

Castings. (Malleable Iron and Steel.) Balto. Mal. Iron & Steel Cast. Co., Balto Chester Steel Castings Co., Chester, Pa. Haight & Clark, Albany, N. Y.

Celling. (Metal.) [See Roofing. Kinnear & Gager Co., Columbus.

Cement, Howard Hyd, Cement Co., Chattanooga, Tenn. Chemists.

PhemIsts.

Iron Masters' Laboratory, Warrenton, Va.
John M. McCandless, Atlanta, Ga.
John Sanderson, Middlesborough, Ky.
Frederic P. Dewey, Washington, D. C.
Walter M. Stein, Philadelphia, Pa.
Philadelphia Metallurgical Wks., Philadelphia
Ledoux Chemical Laboratory, New York,
Dr. Henry Froehling, Richmond, Va.
Herman Poole, New York, N. V.

Clocks, (Watchman's.) A. Nanz & Co., New York, N. Y C. D. Bernsee, New York, N. Y.

Clutches, (Friction.)
J. H. & D. Lake, Hornellsville, N. Y. J. H. & D. Lake, Hornellsville, N. Y.
Weller Mfg. Co., Chicago, III.
The Moore & White Co., Philadelphia, Pa.
Taper Sleeve Pulley Works, Erie, Pa.
Webster Mfg. Co., Chicago, III.
Walker Mfg. Co., Cleveland, O.
James Smith Woolen Mch. Co., Philadelphia, Pa
Webster, Camp & Lane Machine Co., Akron, O.

Coke Ovens. Gates Bros. & Sharp, Corinth, W. Va Walter M. Stein, Philadelphia, Pa.

Contractors' Machinery and Supplies. (See Hoisting Machinery, and Supplies, [See Hoisting Machinery,]
Lidgerwood Mfg. Co., New York, N. Y.
American Hoist & Derrick Co., St. Paul, Minn.
Vulcan Iron Works Co., Toledo, O.
Marion Steam Shovel Co., Marion, O.
Bucyrus Stm. Shovel & Dredge Co., Bucyrus, O.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Ryan-McDonald Mfg. Co., Balfinore, Md.
G. L. Stuebner & Co., Long Island City, N. Y.
J. H. Lancaster, New York, N. Y.

J. H. Lancaster, New York, N. Y.

Conveying Machinery.

Brown Hoist, & Con. Mch. Co., Cleveland, O.

Webster Mfg. Co., Chicago, Ill.

P. M. Walton, Philadelphia, Pa.

Walker & Elliott, Wilmington, Del.

F. H. C. Mey, Buffalo, N. Y.

Weller Mfg. Co., Chicago, Ill.

W. J. Clark & Co., Salenn, O.

H. W. Caldwell & Son Co., Chicago, Ill.

McLanahan & Stone, Hollidaysburg, Pa.

The Jeffrey Mfg. Co., Columbus, O.

Link-Belt Engineer'g Co., Nicetown (Phila.), Pa.

Cord. (Bell, Sash, Are Light, Trolley, etc.)

Cord. (Bell, Sash, Arc Light, Trolley, etc.) Sampson Cordage Works, Boston, Mass.

Corrugated Iron. [See Roofing and Siding.]

Corrugated Iron, [See Roofing and Siding Cotton Gln Machinery. National Cotton Gin Co., Boston, Mass. George R. Lombard & Co., Augusta, Ga. Talbott & Sons, Richmond, Va. Van Winkle Gin & Machinery Co., Atlanta, Ga. Valk & Murdoch Iron Works, Charleston, S. C.

Cottonseed-oll Machinery. Ottonseed-oll Machinery.

Boomer & Boschert Press Co., Syracuse, N. Y.
Cardwell Machine Co., Richmond, Va.
M. C. Cogswell, New York, N. Y.
George J. Fritz, St. Louis, Mo.
Van Winkle Gin & Machinery Co., Atlanta, Ga.
Taibott & Sons, Richmond, Va.

Cranes. (Traveling.) Maris & Beekley, Philadelphia, Pa. Walker Mfg. Co., Cleveland, O.

Walker Mg. Co., Cleveland, O.

Crushers. (Corn and Cob.)

Sprout, Waldron & Co., Muncy, Pa.

Munson Bros., Utica, N. Y.

M. C. Cogswell, New York, N. Y.

Foos Mg. Co., Springfield, O.

Thompson & Campbell, Philadelphia, Pa.

Talbott & Sons, Richmond, Va.

Nordyke & Marmon Co., Indianapolis, Ind.

Crushing and Pulverizing Machinery Southern Equipment Co., Chattanoo Bradley Fertifizer Co., Boston, Mass Copeland & Bacon, New York, N. V.

Foos Mfg. Co., Springfield, O.
James H. Lancaster, New York, N. Y.
Cyclone Pulverier Co., New York, N. V.
F. D. Cummer & Son Co., Cleveland, O.
W. F. Mosser & Son, Allentown, Pa.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
Union Foundry & Mch. Wks., Rockaway, N. J.
Thompson & Campbell, Philadelphia, Pa.
J. R. Alsing Co., New York, N. Y.
National Machinery Co., Tiffin, O.
P. M. Walton, Philadelphia, Pa.
Munson Bros., Utica, N. Y.
Sprout, Waldron & Co., Muncy, Pa.
Sturtevant Mill Co., Boston, Mass.
Gates Iron Works, Chicago, Ill.
American Ore Machinery Co., New York, N. Y.
Frisbee-Lucop Mill Co., New York, N. V.
Stedman's Fdy. & Mch. Works, Aurora, Ind.
Walker & Elliott, Wilmington, Del. Walker & Elliott, Wilmington, Del.

Walker & Elliott, Wilmington, Del.
Lloyd Booth Co., Youngstown, O.
James Murray & Son, Baltimore, Md.

Cups. (Oil and Grease.)

Wm. Powell Co., Cincinati, O.
H. A. Williams Mfg. Co., Boston, Mass.
Lackawanna Lubricating Co., Scranton, Pa.
Sherwood Mfg. Co., Buffalo, N. Y.

Cutter Hends, Samuel J. Shimer & Sons, Milton, Pa. Derricks, American Hoist & Derrick Co., St. Paul, Minn.

Draughtsmen.
A. N. Houghton, Boston, Mass.

Dredges and Excavators Predges and Exenvators, Vulcan Iron Works Co., Toledo, O. Urie Dredge Mfg. Co., Kansas City, Mo. Marion Steam Shovel Co., Marion, O. Copeland & Bacon, Philadelphia, Pa. Bucyrus Stm. Shovel & Dredge Co., Bucyrus, O.

DrIDs. (Prospecting.)
Sullivan Machinery Co., Chicago, Ill.
M. C. Bullock Mfg. Co., Chicago, Ill.
General Electric Co., New York, N. V.

Drills, (Rock.) Sullivan Machine PPHIs. (Rock.)
Sullivan Machinery Co., Chicago, III.
M. C. Bullock Mfg. Co., Chicago, III.
Rand Drill Co., New York, N. Y.
Ingersoll-Sergeant Rock D. Co., New York, N. Y.

DrIIIs. (Twist.)
Cleveland Twist Drill Co., Cleveland, O.
Cincinnati Tool Works, Cincinnati, O.
Graham Twist Drill & Chuck Co., Detroit, Mich.
New Process Twist Drill Co., Taunton, Mass.

New Process Twist Drill Co., Taunton, Mass.

Drilling Machines,
W. F. & Juo. Barnes Co., Rockford, Ill.
Lodge & Davis Machine Tool Co., Cincinnati, O.
Foos Mfg. Co., Springfield, O.
Sebastian-May Co., Sidney, O.
E. Harrington, Son & Co., Philadelphia, Pa.
H. Bickford, Lakeport, N. H.
Draper Machine Tool Co., Worcester, Mass.
Silver Mfg. Co., Salem, O.
Stow Mfg. Co., Binghamton, N. Y.
Stow Flexible Shaft Co., Ltd., Philadelphia, Pa.
Pennsylvania Mch. Co., Ltd., Philadelphia, Pa.
Dry Klins.

Dry Klins.

F. D. Cummer & Son Co., Cleveland, O. B. F. Sturtevant Co., Boston, Mass.

B. P. Cherry,
E.Jectors,
Sherwood Mfg. Co., Buffalo, N. V.
Pancoast & Maule, Philadelphia, Pa.
Penberthy Injector Co., Detroit, Mich

Electric-light and Power Plants. Electric-Hight and Power Plants,
Simpson Electric Mig. Co., Chicago, Ill.
John E. Beggs Mch. & Sup. Co., New York, N.Y.
Jordan & MacLeod, Washington, D. C.
H. Ward Leonard & Co., New York, N. Y.
S. D. Warfield Co., Baltimore, Md.
Rockford Electric Mig. Co., Rockford, Ill.
Smith, Saunders & Collins, Newton, N. C.
General Electric Co., New York, N. Y.
Heisler Electric Co., Philadelphia, Pa.

Electric Co., Piniadejana, Pa.

Electric Railway Equipment,
New York Equipment Co., New York, N. Y.
G. T. Woods Mfg. Co., New York, N. Y.
H. Ward Leonard & Co., New York, N. Y.
S. W. Frescoln, New York, N. Y.
General Electric Co., New York, N. Y.

General Electric Co., New York, N. Y.
Electrical Supplies,
W. J. Williams, Dallas, Texas.
G. T. Woods Mig. Co., New York, N. Y.
Jordan & MacLeod, Washington, D. C.
S. D. Warfield Co., Baltimore, Md.
General Electric Co., New York, N. Y.
Rockford Electric Co., Rockford, Ill.
Smith, Saunders & Collins, Newton, N. C.
Heisler Electric Co., Philadelphia, Pa.

Heisler Electric Co., Philadelphia, Pa.

Elevators,
Avery Supply Co., Louisville, Ky.
Graves Elevator Co., Rochester, N. Y.
Otis Bros, & Co., New York, N. Y.
Howard Fdy, & Mch. Works, Philadelphia, Pa.
Enterprise Safety Elev. Co., Chattanooga, Tenn
Jas. H. Curran, Cincinnati, O.
James Bates, Baltimore, Md.
Morse, Williams & Co., Philadelphia, Pa.

Elevator Devices. Safety Elevator Brake Co., Chicago, Ill.



Toledo, O . U. S. A. Manufacturers of

Dredges and Excavators. Boiler Fronts and Railroad Castings.

OUT "GIANT" EXCAVATOR,

We ght 40 tons, of pacity 2,000 cubic wards per day.



LIDGERWOOD MFG. CO. Specially adapted for Railroad and Contractors' uses, ile Driving, Bridge and Dock Building, Excavating, etc. 300 Styles and Sizes and over 8,500 in use. Liberty Street, New York. 99 First Avenue, Pittsburgh, Pa. 15 N. 7th Street, Philadelphia, Pa. 34 and 36 W. Monroe Street, Chicago. 197 to 203 Congress Street, Boston. 57 North First Street, Portland, Ore. 610 North Fourth Street, St. Louis. 8ALES AGENTS—FRASKE & CHALMERS, Salt Lake City, Utah, and Sena. Montana; HENDRIK & BOLTHOFF MFG. Co., Denver, Colorado.

QUARRYING AND CONTRACTING MACHINERY. AMERICAN HOIST & DERRICK CO., St. Paul, Minn. Chicago. 48 S. Canal S.



HOWARD HYDRAULIC CEMEN

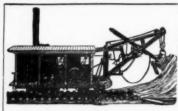
HOWARD HYDRAULIC CEMENT CO., Chattanooga, Tenn.

THE PFRFEC'ION

PLASTERING MATERIALS.

SURPASSES KEENE'S CEMENT AND MUCH CHEAPER. NOT A PATENT,

Natures Own Product.



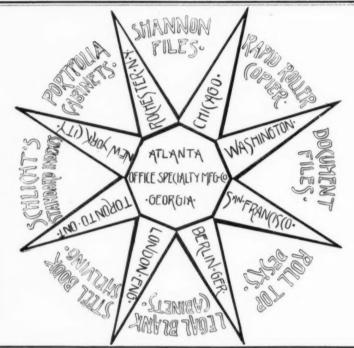
For Drainage and Irrigation, Filling Land, Levee Work, Harbor Work, Etc.

STEAM SHOVELS,

For Railroads, Contract Work, Stripping Coal and Ore, Brickyards, Highways, Etc.

Bucyrus Steam Shovel

BUCYRUS, OHIO.



YLOR SEST YORKSHIRE BAR IRON.

For Staybolts Piston Rods, Crank Plas, Etc.
USED BY THE LEADING RAILROADS.

"SPECIAL" STEELS

Sole Representatives in the United States, Nos. 11 and 13 Oliver Street, ROSTON B. M. JONES & CO. No. 143 Liberty Street, NEW YORK.

R. MUSHET'S



WEIR FROG CO. MANUFACTURERS FRED. G. WEIR'S WEIR FROG CO. IMPROVED RIGIDS SPRING FROGS (ROSSINGS THACK WORK SINCIPLES THREE THROW SPLIT SWITCHES. FROGS SWITCHES FROGS CHOSSINGS CURVE FREDCWEIR DIE FORMED RAIL BRACES SWITCH FIXTURES, ETC. RAIL CHAIRS

CABLE FLEURIC THACK WORK FRIGS SWITCHES

WORKS AT S ALL SIZES & SHAPES. RAILS ALL SIZES & SHAPES.

ANGLES & BARS SWITCH FIXTURES & C. & C. & STEEL SPLICES FASTENINGS. ANGLES & BARS SWITCH FIXTURES & C. & C. & STEEL SPLICES FOR TRACKS OF ALL SORTS, IN BOILER BRIDGES, ROOFS, RAILROADS, STREET RAILWAYS, BILLETS, WIRE, HAILS, 2003 ARIVOYS, PARTICES, WIRE, HAILS, 2003 ARIVOYS, PARTICES, WIRE, HAILS, 2003 ARIVOYS, PARTICES, WILLS, PACTOR ES, WAIL STREET, OFFICE, NO. 8 WAII STREET FROM WAY.)

BOYTON BALES OFFICE, PROMOWNER, MINES, PACTOR ES, WORKS, WAII STREET, PROMOWNER, PACTOR ES, WORKS, WAII STREET, PROMOWNER, PACTOR ES, WORKS, WAII STREET, PACTOR ES, WORKS, WORKS, WAII STREET, PACTOR ES, WAII STREET, PACTOR ES, WAII STREET, PACTOR ES, WORKS, WAII STREET, PACTOR ES, WAII STREET, PACTOR

NEW: Second-hand for relaying and cut to desired lengths for contractors, builders and mill use. OLD: For scrap iron and steel. Also railroad scrap. en buying write to us for prices.

J. H. RICHARDSON & CO.
Pennsylvania Ave. PITTSBURGH.

IRON AND BRASS FOUNDERS.
HAIGHT & CLARK,
Albany, N. Y.
Aluminum, Brass & Bronze Castings, Electric
Railway Gears and Boxes for Motors, requiring
great strength and wearing qualities a Specialty.
Fine Gray Iron, Brass and Bronze Castings,
Send samples for estimate. Nickel, Brass and
Bronze Plating.



CLASSIFIED INDEX OF ADVERTISERS.

J. D. & Wm. G. Moler, Charleston, W. Va. Edward Barrath & Co., Chicago, Ill. W. H. Gibbes, Jr., & Co., Columbia, S. C. John N. Adams, Richmond, Va. F. J. Amweg, Philadelphia, Pa. Calhoun & Co., Chicago, Ill. John C. Chase, Wilmington, N. C. George N. Comly, Wilmington, Del. T. Waln-Morgan Draper, New York, N. Y. Su. Y. Frescoln, New York, N. Y. Griswold & Nunan, Owensboro, Ky. W. H. Gibbes, Jr., & Co., Columbia, S. C. R. F. Hartford, Atlanta, Ga. Julian Kennedy, Pittsburg, Pa. Olin H. Landreth, Nashville, Tenn. H. Ward Leonard & Co., New York, N. Y. C. Ad. Mezger, Charlotte, N. C. H. Ward Leonard & Co., New York, N. Y. C. Ad. Mezger, Charlotte, N. C. Albert D. Pentz, Elizabeth, N. J. Herman Poole, New York, N. Y. Josiah Pierce, Jr., Baltimore, Md. Walter M. Stein, Philadelphia, Pa. von Schon & Garner, Fredericksburg, Va. Arthur L. Stevens, Philadelphia, Pa. Ed. N. K. Talcott, New York, N. V.

Ed. N. K. Talcott, New York, N. V.

Englnes. [See Machinery.]
Avery Supply Co., Louisville, Ky.
H. Dudley Coleman Machine Co., Ltd., N.
Orleans, La.
Geo. R. Lombard & Co., Augusta, Ga.
Morris Mch. & Iron Co., Dover, N. J.
Oil Well Supply Co., Pittsburg and New Yow
Weisel & Vilter Mfg. Co., Milwaukee, Wis.
Aiax Iron Works, Corry, Pa.
Aiax Iron Works, Corry, Pa. Weisel & Vilter Mfg. Co., Milwaukee, Wis. Ajax Iron Works, Corry, Pa. Edward P. Allis Co., Milwaukee, Wis. American Engine Co., Bound Brook, N. J. American Well Works, Aurora, Ill. Bass Foundry & Mch. Works, Ft. Wayne, Ind. John E. Beggs Mch. & Sup. Co., New York, N.Y. Buckeye Engine Co., Salem, O. Cameron & Barkley Co., Charleston, S. C. Chandler & Taylor Co., Indianapolis, Ind. George M. Clapp, New York, N. Y. Cleveland & Hardwick, Erie, Pa. Cline Engine & Machine Co., Plymouth, O. Dake Engine Mfg. Co., Grand Haven, Mich. P. K. Dederick & Co., Albany, N. Y. Delbert Engineer's Co., Ltd., New Orleans, La. H. P. Edmond, Richmond, Va. H. P. Edmond, Richmond, Va. S. C. Forsaith Machine Co., Manchester, N. H. S. C. Forsaith Machine Co., Manchester, N. H. Frick Co., Waynesboro, Pa. George J. Fritz, St. Louis, Mo. Globe Machine Works, Cincinnati, O. Greer Machinery Co., Knoxville, Tenn. Harrisburg Fdy. & Mch. Wks., Harrisburg, Pa. Houston, Stanwood & Gamble, Cincinnati, O. James Leffel & Co., Springfield, O. W. C. Leffel Co., Springfield, O. J. H. McEwen Mfg. Co., Ridgway, Pa. N. Y. Safety Steam Power Co., New York, N. Y. New York Central Iron Wks. Co., Geneva, N. Y. Pennsylvania Mch. Co., Ltd., Philadelphia, Pa.

New York Central Iron Wks. Co., Geneva, N. Y. Pennsylvania Mch. Co., Ltd., Philadelphia, Pa. Philadelphia Eng. Wks., Ltd., Philadelphia, Pa. Skinner Engine Co., Erie, Pa. Smith-Courtney Co., Richmond, Va. Stearns Mfg. Co., Erie, Pa. Struthers, Wells & Co., Warren, Pa. Talbott & Sons, Richmond, Va. Taylor Engine Co., Chambersburg, Pa. Geo. W. Tiflt, Sons & Co., Buffalo, N. V. Valk & Murdoch Iron Works, Charleston, S. C. Valley Iron Works, Williamsport, Pa. E. Walker Tool Co., Erie, Pa. S. D. Warfield Co., Baltimore, Md. Webster, Camp & Lane Machine Co., Akron, O. Wheland's Fdy. & Mch. Wks., Chattanooga, Tenn Engelnes. (Gas.)

Wheland's Fdy.& Mch.Wks., Chattanooga. Fem Engines. (Gas.) H. P. Edmond, Richmond, Va. Thomas Kane & Co., Chicago, Ill. Otto Gas Engine Works, Philadelphia, Pa. Clark Sintz, Springfield, O. Van Duzen Gas & Gaso. Eng. Co., Cincinnati, O.

Engines. (Oil.)
Rochester Mch. Tool Works, Rochester, N. Y.
Whitman & Barnes Mfg. Co., Syracuse, N. Y.

Engravers.
Baltimore Engraving Co., Baltimore, Md.
A Hoen & Co., Richmond, Va.
Photo Electro Engraving Co., New York, N. Y.

Photo Electro Engraving Co., 1985.

Feed Water Heaters.

Edward P. Allis Co., Milwaukee, Wis.

James Berryman, Philadelphia, Pa.

Delbert Engineer'g Co., Ltd., New Orleans, La.

Hine & Robertson, New York, N. Y.

Stilwell & Bierce Mfg. Co., Dayton, O.

Fencing.
Hartman Mfg. Co., Beaver Falls, Pa.
H. Balderston & Son, Baltimore, Md.
Champion Iron Co., Kenton, O.
Cushman Iron Co., Roanoke, Va. Cushman Too, Roadwey Val.

Dufur & Co., Baltimore, Md.

Ludlow-Saylor Wire Co., St. Louis, Mo.

Fred. J. Meyers Mfg. Co., Covington, Ky.

Toledo Wire & Iron Works, Toledo, O.

Emery Wheels. [See Polishing and Grinding Machinery.]

Engineers. (Consulting and Contracting.)
A. Leofred, Montreal, Canada.
W. B. Smith Whaley, Columbia, S. C.
Collins & Hackett, Staunton, Va.
J. D. & Wm. G. Moler, Charleston, W. Va.

Filton.

Fertilizer Machinery.
Cameron & Barkley Co., Charleston, S. C.
Charleston Lead Co., Charleston, S. C.
Charleston Lead Co., Charleston, S. C.
W. D. Dunning, Syracuse, N. Y.
Valk & Murdoch Iron Works, Charleston, S. C.
Walker & Elliott, Wilmington, Del. Files. Nicholson File Co., Providence, R. I.

Nicholson File Co., Providence, R. I.
Filters.
Gravity Purifier Co., Decatur, Ind.
Fire Brick.
Union Mining Co., Mt. Savage, Md.
Ashland Fire Brick Co., Ashland, Ky.
Henry Stevens's Sons, Macon, Ga.
Louisville Fire Brick Works, Louisville, Ky.

outhern Fire Brick Works, Richm

Flour and Grist Mill Machinery and Supplies.

B. Allfree Mfg. Co., Indianapolis, 1 J. B. Allfree Mfg. Co., Indianapolis, Ind. H. W. Caldwell & Son Co., Chicago, Ill. J. H. Day & Co., Cincinnati, O. Munson Bros., Utica, N. Y. Nordyke & Marmon Co., Indianapolis, Ind. Sprout, Waldron & Co., Muncy, Pa. Stilwell & Bierce Mfg. Co., Dayton, O. Talbott & Sons, Richmond, Va. Thompson & Campbell, Philadelphia, Pa. Weller Mfg. Co., Chicago, Ill.

Oliver P. Clay Co., Cheveland, O.
Hine & Robertson, New York, N. Y.
St. Louis Steel Wire Brush Co., St. Louis, Mo.
Sherwood Mfg. Co., Buffalo, N. Y.

Forges,
Bradley & Co., Syracuse N. Y.
Foos Mfg. Co., Springfield, O.
B. F. Sturtevant Co., Boston, J

Fuel Gas Producers.
T. H. Brooks & Co., Cleveland, O.
Julian Kennedy, Pittsburg, Pa.

Furnace Bullders.

Walter M. Stein, Philadelphia, Pa.

American Bridge & Iron Co., Roanoke, Va.

Philadelphia Eng. Wks., Ltd., Philadelphia, Pa. Julian Kennedy, Pittsburg, Pa. S. W. Frescoln, New York, N. Y.

Furniture. (Office.)
J. M. Sauder & Co., Roanoke, Va.
Office Specialty Mg. Co., Atlanta, Ga.
Derby & Kilmer Desk Co., Boston, Mass.

Gas Machines. & V. Domestic Gas Mch. Co., New York, N.Y. N.V. Domestic Gas Mch. Co., New Yo Glasss. (Stained.) Henry Seim & Co., Baltimore, Md. Ernest V. Richards, Wilmington, N. C. W. A. Heffernan, Lynchburg, Va.

Grates and Grate Bars. Kelley Bros. Goshen, Ind. New York Central Iron Wks. Co., Geneva, N.Y. Hine & Robertson, New York, N. Y. Walworth Run Foundry & Mfg.Co., Cleveland, O.

Grain Elevator Supplies. Weller Mfg. Co., Chicago, III.
H. W. Caldwell & Son Co., Chicago, III.
W. J. Clark & Co., Salem, O.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineer's Co., Nicetown (Ph
Webster Mfg. Co., Chicago, III.

Webster Mfg. Co., Chicago, Ill.

Grinding and Polishing Machinery.
N. Y Belt. & Pack. Co., Ltd., New York, N. Y.
Grant Corun. Wheel Mfg. Co., Chester, Mass.
Southern Emery Wheel Co., Tallapoosa, Ga.
Michigan Emery Wheel Co., Detroit, Mich.
Waltham Emery Wheel Co., Waltham, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.

Norton Emery Wheel Co., Worcester, M Hammers. (Steam and Power.) Bradley & Co., Syracuse, N. Y. Hackney Hammer Co., Cleveland, O. David Bell, Buffalo, N. Y. Belden Machine Co., New Haven, Conn Bement, Miles & Co., Philadelphia, Pa. Long & Allstatter Co., Hamilton, O.

Handle Machinery. [See Wood Machinery.]
Ober Lathe Co., Chagrin Falls, O.
Egan Co., Cincinnati, O.
S. C. Forsaith Machine Co., Manchester, N. H.
Trevor Mfg. Co., Lockport, N. Y.

Hardware Specialties, Berger Bros., Philadelphia, Pa.
L. S. Starrett, Athol, Mass.
H. A. Williams Mfg. Co., Boston, Mass.
J. H. Day & Co., Cincinnati, O.
C. F. Richardson, Athol, Mass.
Belden Machine Co., New Haven, Conn Van Wagoner & Williams Co., New York, N. Y. Cronk Hanger Co., Elmira, N. Y. Covert Mfg. Co., West Troy, N. Y.

Covert Mig. Co., Salem, O. Silver Mig. Co., Salem, O. U. S. Wind Eng. & Pump Co., Batavia, Ill. Heating Apparatus.
Warren Webster & Co., Philadelphia, Pa.
New England Vent. & Heat. Co., Providence, R.I.
New York Central Iron Wks. Co., Geneva, N. Y. West & Branch, Richmond, Va. T. H. Brooks & Co., Cleveland, O. B. F. Sturtevant Co., Boston, Mass

B. F. Sturtevant Co., Boston, Mass.

Holstling Machlnery,
Avery Supply Co., Louisville, Ky.
American Hoist & Derrick Co., St. Paul, Munn.
Lincoln Iron Works, Rutland, Vt.
Morris Machine & Iron Co., Dover, N. J.
P. K. Dederick & Co., Albany, N. Y.
James H. Lancaster, New York, N. Y.
Dake Engine Mfg. Co., Grand Haven, Mich.
Cline Engine & Machine Co., Plymouth, O.
Brown Hoist. & Conv. Mch. Co., Cleveland, O.
Lidgerwood Mfg. Co., New York, N. Y.
Union Fdy. & Mch. Works, Rockaway, N. J.
John F. Byers Machine Co., Ravenna, O.
M. C. Bullock Mfg. Co., Chicago, Ill.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Sullivan Machinery Co., Chicago, Ill.
Copeland & Bacon, New York, N. Y.
Vulcan Iron Works Co., Toledo, O.
Ryan-McDonald Mfg. Co., Baltimore, Md.
Webster, Camp & Lane Machine Co., Akron, O.
Chain Hoist. Holsting Machinery. Chain Hoist.

Maris & Beekley, Philadelphia, Pa. E. Harrington, Son & Co., Philadel n & Co., Philadelphia, Pa Hoop Machinery. Frontier Iron Works, Detroit, Mich.

N. V. Belt. & Pack, Co., Ltd., New York, N. V. John C. N. Guibert, New York, N. Y.

John C. N. Guibert, New York, N. Y. Hose Racks. John C. N. Guibert, New York, N. Y. Hydrants. Ludlow Valve Mfg. Co., Troy, N. Y.

Ludlow Valve Mfg. Co., Troy, N. Y.

Ice-Making Machinery.
Remington Machine Co., Wilmington, Del.
Weisel & Vilter Mfg. Co., Milwaukee, Wis.
Burns Mfg. Co., Atlanta, Ga.
E. C. Hillyer & Co., Newport News, Va.
Arthur L. Stevens, Philadelphia, Pa.
Van Winkle Gin & Machinery Co., Atlanta, Ga.
Fred. W. Wolf Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.

Frick Co., Waynesnoro, Fa.

Injectors.
Delbert Engineer'g Co., Ltd., New Orleans, La.
Garfield Injector Co., Wadsworth, O.
Sherwood Mg, Co., Buffalo, N. Y.
Penberthy Injector Co., Detroit, Mich.
Jenkins Bros., New York, N. Y.
Hine & Robertson, New York, N. Y.

Insurance.
Employers' Liability Assurance Corporation
Limited, Boston, Mass.
Hartford Steam Boiler Inspection & Insuran
Co., Hartford, Conn.

Iron and Steel.

Iron Buildings and Roofs, Pennsylvania Steel Co., Steelton, American Bridge & Iron Co., Roa S. W. Frescoln, New York, N. Y.

Ironworking Machinery. Ponworking MachInery.
Avery Supply Co., Louisville, Ky.
E. M. Hopkins, Savannah, Ga.
Sebastian Lathe Co., Cincinnati, O.
H. Bickford, Lakeport, N. H.
Draper Machine Tool Co., Worcester, Mass.
Ingersoll Milling Machine Co., Rockford, Ill.
Toledo Machine & Tool Co., Toledo, O.
National Machinery Co., Tiffin, O.
Henley Machine Tool Works, Richmond, Ind
Bement, Miles & Co., Philadelphia, Pa.
Sebastian-May Co., Sidney, O.
Stow Mfg. Co., Binghamton, N. Y.
Smith-Courtney Co., Richmond, Va. Stow MR. Co., highamon, N. 1.
Pennsylvania Mch. Co., Ltd., Philadelphia, Pa.
Stow Flexible Shaft Co., Ltd., Philadelphia, Pa.
E. Harrington, Son & Co., Philadelphia, Pa.
Lodge & Davis Mch. Tool Co., Cincinnati, O.
Niagara Stamping & Tool Co., Buffalo, N. Y.

Knitting Machinery. Nye & Tredick, Philadelphia, Pa.

Canndry Machinery.
Oakley & Keating, New York, N. V.
Geo. J. Fritz, St. Louis, Mo.
The A. M. Dolph Co., Cincinnati, O.

Lights. (Factory and Outdoor.) Keegan & Halpin, New York, N. Y. T. H. Brooks & Co., Cleveland, O. Locomotive Bullders, [See Railroad Equip

ment and Supplies.]
Richmond Loco. & Mch. Wks., Richmond, Va.
H. K. Porter & Co., Pittsburg, Pa.
Baldwin Locomotive Works, Philadelphia, Pa. Lumber. [See Directory of Southern Lumber Dealers.]

Dealers.]
Hundley Bros. & Co., Oxford, N. C.
Harris & Thornton, Chattanooga, Ter
E. D. Albro Co., Cincinnati, O.
T. J. Shryock & Co., Baltimore, Md.
H. H. McGrew, Middlesborough, Ky.

Machinery.
Thomas F. Bishop & Co., Cincinnati, O. Central Machine Works, Cleveland, O.

New York Central Iron Wks. Co., Geneva, N.Y. Cameron & Barkley Co., Charleston, S. C. Avery Supply Co., Louisville, Ky. W. J. Williams, Dallas, Texas. H. H. Mansfield, New York, N. Y. S. D. Warfield Co., Baltimore, Md. Brown & King Supply Co., Atlanta, Ga. Southern Equipment Co., Chattanooga, Tenn. Cushman Iron Co., Roantoke, Va. Wm. A. Sweetzer, Brockton, Mass. Chester Bertolette & Co., Norristown, Pa. Pennsylvania Mch. Co., Ltd., Philadelphia, Pa. S. C. Forsaith Machine Co., Manchester, N. H. Stow Flexible Shaft Co., Ltd., Philadelphia, Pa. John N. Adams, Richmond. Va.

Machinery and Tools, (Sec Machinery and Tools, (Second-hand.)
H. J. Pearson, Cincinnati, Ohio.
W. C. Jemison, President, Tuskaloosa, Aia.
Burton Machine Co., Eric, Pa.
John Holmes, Middlesborough, Ky.
"Maslins," Jersey City, N. J.
Thomas F. Bishop & Co., Cincinnati, O.
Southern Cotton Oil Co., Philadelphia, Pa.
Machine Shop, care Manifactureres? Record.
H. H. Mansfield, New York, N. Y.
Geo. Place Machinery Co., New York, N. V.
F. H. Potter, Providence, R. L.
Frank Toomey, Philadelphia, Pa.
Chester Bertolette & Co., Norristown, Pa.
Geo. M. Clapp, New York, N. Y.
New York Machinery Depot, New York, N. Y.
Prentiss Tool & Supply Co., New York, N. Y.

MHI Engineers,
John C. Knight, Boston, Mass.
Lockwood, Greene & Co., Boston, Mac
C. R. Makepeace & Co., Providence, R
Drew, Baldwin & Co., New York, N. V

Drew, Baldwin & Co., New York, N. Y.

MIH SuppHess,
W. J. Williams, Dallas, Texas.
W. H. Gibbes, Jr., & Co., Columbia, S. C.
Brown & King Supply Co., Atlanta, Ga.
Southern Saw Mfg, Co., Atlanta, Ga.
H. Dudley Coleman Mch. Co., Ltd., New Orleans.
Queen City Supply Co., Cincinnati, O.
Talbott & Sons, Richmond, Va.
Waters & Garland, Louisville, Ky.
James Smith Woolen Mch. Co., Philadelphia, Pa.
Delbert Engineer'g Co., Ltd., New Orleans, La.
Smith-Courtney Co., Richmond, Va.
Cameron & Barkley Co., Charleston, S. C.
Greer Machinery Co., Knoxville, Tenn.
American Supply Co., Providence, R. I.
E. C. Atkins & Co., Indianapolis, Ind.

Mineral Wool.

Mineral Wool, Roanoke Mineral Wool Co., Roanoke, Va. U. S. Mineral Wool Co., New York, N. Y.

U. S. Mineral Wool Co., New York, N. Y.

Miscellancous.
Corresp'ce School of Mechanics, Scranton, Pa.
Hartsfeld Farnace & Refining Co., Newport, Ky.
A. J. Hemphill, Secretary, Philadelphia, Pa.
National Cordage Co., New York, N. V.
Miller Safe & Iron Works, Baltimore, Md.
Wm. Horner, Reed City, Mich.
Ault & Wiborg Co., Cincinnati, O.
Ernest Coates, New York, N. V.
Lore & Co., Baltimore, Md. Ault & Wiborg Co., Cincinnati, G. Ernest Coates, New York, N. Y. Jory & Co., Baltimore, Md. H. V. & H. W. Poor, New York, N. Y. Ed. N. Kirk Talcott, New York, N. Y. C. J. Haden, Atlanta, Ga. Southern Information Bureau, Boston, Mas F. S. Mordaunt Co., Chicago, Ill. Plaza Hotel, New York, N. Y. Chas. M. Stieff, Baltimore, Md. Laray Artistic Wood Co., Laray, Va. Arnold Metal Wheel Co., New London, O. Alex. D. Cunny, Cincinnati, G. Fulton Colville, Atlanta, Ga. Adams & Woodson, Lynchburg, Va. Sanders & Stayman, Baltimore, Md. Standard Coal Co., Boston, Mass. Corporation Book Co., Philadelphia, Pa. C. A. Gambrill Mig. Co., Baltimore, Md. Record Printing House, Baltimore, Md. Record Printing House, Baltimore, Md. Salem Battery Co., Salem, Va.

Lubroleine Oil Co., Baltimore, Md. Kingan & Co., Richmond, Va. Wm. C. Robinson & Son, Baltimore, Md.

Ore Washers, Copeland & Bacon, New York, N. Y. Geo. M. Comstock, Mechanicsburg, Pa. McLanahan & Stone, Hollidaysburg, Pa.

McLanahan & Stone, Hollidaysburg, Pa.

PackIng.

N. Y. Belt. & Pack. Co., Ltd., New York, N. Y.

Crandali Packing Co., Palmyra, N. Y.

Forest Sil. Bronze Pack. Cc. New York, N. Y.

James Smith Woolen Mch. Co., Philadelphia, Pa.

Jenkins Bros., New York, N. Y.

Hine & Robertson, New York, N. Y.

H. W. Johns Mfg. Co., New York, N. Y.

Palnt.
Virginia Paint Co., Goshen, Va.
A. Rasch & Son, St. Louis, Mo.
Texas Coal Tar & Asphaltum Co., Dallas, Tex.
H. W. Johns Mfg. Co., New York, N. V.
Canton Steel Roofing Co., Canton, Ohio.
Joseph Dixon Crucible Co., Jersey City, N. J.

ARCHITECTS, CIVIL ENGINEERS, MINING ENGINEERS, CHEMISTS, Etc.

THOMAS G SMITH, JR,
CONSULTING AND CONTRACTING ENGINEER,

"STEAM PLANTS."

No. 11 HAMMOND BUILDING,

CINCINNATI, OHIO.

LOCATION WANTED For a Large MACHINERY PLANT,

with capital invested of \$250,000 and employing 100 hands, mostly skilled labor. Will enlarge and employ 200 to 300 hands in new location. Have been in successful operation for thirty years. Want site and additional capital, Business mostly export trade. Address

ED. N. KIRK TALCOTT. CIVIL AND MECHANICAL ENGINEER, 57 BROADWAY, NEW YORK.

THE IRON-MASTERS' LABORATORY.

Established in 1866 in the Interest of Iron-Masters.

Exclusively for the Analysis of Iron Ores, Pig and Wrought Irons, Steels, Limestones, Clays, Coals and Slags for Metallurgical Purposes.

Branch Office, No. 339 Walnut Street, Philadelphia.

LABORATORY AT WARRENTON, VIRGINIA.

R. MAKEPEACE Architects and Mill Engineers PROVIDENCE, R. I. Plaus, I pecifications and Esti-mates furnished for Cotton & Woolen Mills.

LOCKWOOD, GREENE & CO. Mill Architects and Engineers,

131 Devonshiro Etreet. BOSTON, MASS.

SPECIALTY:

Plans, Specifications and Superintendence for the Construction, Equipment and Organization of

DREW, BALDWIN & CO. MILL ARCHITECTS # ENGINEERS

45 Broadway, New York.

Plans for Best Modern Mill Construction Arrangement of Power, Machinery, Shafting, Rope Transmission, etc. Textile Mills a Specialty.

CUSTAF BOTTICER. Architect,

WINSTON, N. C. Plans, Specifications, Estimates and Superin-endence. Heavy Buildings a Specialty

Charles H. Read, Jr. ARCHITECT.

No. 12 N. Ninth Street.

RICHMOND, VA.

WILSON & HUGGINS. ARCHITECTS.

Correspondence Solicited.

ROANOKE, VA.

A. G. BAUER.

Architect and Superintendent.

RALEIGH, N. C.

GRISWOLD & NUNAN.

Architects and Engineers, Plans, Specifications, Superintendence and Guar-anteed Estimates. Surveys and Estimates of Roads, Railroads, Bridges and Mines. Correspondence solicited. Plans, Specifica OWENSBORO, KY.

D. G. ZEIGLER,

ARCHITECT.

CHARLESTON, S. C.

Plans and Specifications furnished for all classes of Buildings. Correspondence cheerfully replied to. Remodeling of existing structures a specialty.

TEAGUE & MARYE.

ARCHITECTS.

Virginian Building, Norfolk, Va., Washington Ave. & 27th St., Newport News, Va.

Correspondence Invited.

COLLINS & HACKETT, Architects and Mechanical Engineers,

Rooms 27 and 28 CROWLE BUILDS STAUNTON, VIRGINIA.

awings, Specifications and Superint Furn shed for all kinds of Buildings, chinery, &c., at Reason*ble Rates

EDW. BARRATH & CO. Architects & Mechanical Engineers,

MONADNOCK BLOCK, ROCM 1404. Cor. Jackson & Dearborn Streets, Chicago, Ill. Packing Houses a Specialty, Special Machiner designed. All kind of Iron and Steel Structure Bridges, Trusses, Roofs, etc. Blue printing an drafting in general.

ADAMS & WOODSON MANUFACTURERS SASH, DOORS, BLINDS, PINE AND HARDWOOD FINISH FOR BUILDING. SHIPMENTS MADE TO ALL POINTS TO WRITE FOR PRICES. LYNCHBURG, VA.

CALHOUN & CO. Civil Engineers,

Contractors for the Construction of Railroads and Public Works.

119, 121 LaSalle Street, CHICAGO, ILL

VON SCHON & CARNER,

Civil Engineers,

FREDERICKSBURG, VA

Property, Topographical, Townsite. RAILROAD and MINING SURVEYS. Reports on Mineral and Timber Property. Sewerage and Water Works.

WE OPERATE THROUGHOUT THE SOUTH.

OLIN H. LANDRETH, NASHVILLE, TENN. CONSULTING ENGINEER.

Water Works, Water Power, Drainage, Re-clamation, Improvement of Highways and Street Paving, Topographical Surveys and Maps. Ex-aminations, Expert Tests, Reports, Designs, Specifications and Estimates.

J. D. & WM. G. MOLER.

Civil and Consulting Engineers,

SPRINGFIELD, OHIO. CHARLESTON, W. VA.

Vater Works, Sewerage, Railroads, Mineral
and Timber Surveys and Townsites,

Construction Superintended. Water

ALBERT D. PENTZ.

CONSULTING ENGINEER.

Modern Shop Practice and Tools Labor Saving Machinery Designed. ELIZABETH,

R. F. HARTFORD

CONSULTING ENGINEER.

Equitable Building ATLANTA, GA.

Sewerage and Sewage Disposal.
Water Supply and Water Power.
Steam and Electric Power Plants. Expert Tests, Examinations and Reports.
Plans, Estimates & Specifications.
Supervision of Work.

ARTHUR L. STEVENS,

MECHANICAL ENGINEER, Philadelphia, Pa. 11 South Ninth St.,

MACHINERY AND REFRIGERATING PLANTS Special Machinery Designed and Built by Contract.

W. B. SMITH WHALEY,

Mechanical Engineer,

[MBM. A. S. M. E]

Plans, Specifications and Drawings for Cotton
Mills, Fertilizer Factories, Acid Chambers, &c.
Power Plants—Ste m, Water and Electrical.
Water Powers Rated and Sites Surveyed.

Main Street, Columbia, S. C.

JOSIAH PIERCE, JR.

Civil and Topographic Engineer,

1324 F St., Washington, D. C., and 11 South St., Balto., Md. Topographic Surveys of any extent and character organized and executed.

GEORGE N. COMLY, Consulting Mechanical Engineer,

904 Adams Street, WILMINGTON, DTL.
Steam Engines Indicated, Boilers Tested for
Apporature efficiency and Steam Expert Work
general. Factories designed. Drawings and
eccifications furnished on application. Corresondence solicited.

45 Broadway. New York. CONSULTING ENGINEER.

T. WALN-MORGAN DRAPER,

Civil, Mining and Mechanical Engineer.

Eighteen years' experience in the South and est. Examines, Advises and Superintends ommercial Enterprises. Correspondence and usuitation solicited.

JOHN C. CHASE,

Hydraulie @ Sanitary Engineer WILMINGTON, N C.

Professional advice regarding Water Supply, Sewerage and the Development of Water Power. Surveys, Plans, Specifications, and Estimates. Examinations and Reports for Investors

JOHN N. ADAMS, Civil Engineer and Contractor

606 N. 10th Street,

All kinds of engineering work contracted for and carried out on shortest notice, including designing and constructing. Surveys. Plans and estimates made for every class of engineering. Railroads. Water-powers developed. Sewerage and water supply. Mining surveys. Townsites laid off. Toographical, bird's-eye view maps and landscape engineering a specialty. Large staff of assistants always ready.

W. H. CIBBES, Jr. & CO. ENGINEERS, CONTRACTORS.

Farm and Mill Machinery,

COLUMBIA, S. C

FREDERICK J. AMWEG, C. E., Mem. Am. Soc. C. E.

Engineer, Contractor and Builder,

Hale Building, Rooms 42-43, Philadelphia.

Southern Office, Commercial Bank Building, Roanoke, Va.

C. AD. MEZGER,

Mining Enginee

P. O. Box 147, CHARLOTTE, N. C.

Reports on mineral properties. Advises on the working and management of mines. Ex-amines and tests ores for treatment with the Mc-Arthur-Forrest process. Dressing and concen-trating of ores a specialty.

A. LEOFRED,

MINING ENGINEER,

MAIN OFFICE, - QUEBEC.

Branch | SHERBROOKE.
Offices: | MONTREAL, 17 Place d'Armes Hill. MINES, MINERAL PRODUCTS.

WALTER M. STEIN, METALL. ENGINEER,

325 Walnut St., Philadelphia, Pa.

Coal Washing and Separating Plants. Improved Belgian Coke Ovens, with or without saving of by-products. Blast Furnace Plants.

THE LEDOUX CHEMICAL LABORATORY, CHEMISTS,

No. 9 Cliff Street,

New York. Analyses of Paints, Oils, Chemicals, Phosphates, Fertilizers, Minerals, Waters, Pyrites, etc., etc. Expert Examinations and Investigations of Processes and Chemical Works. Send for terms.

Chemical and Metallurgical Examinations.

ANALYSES AND REPORTS.

FREDERIC P. DEWEY,

Washington Laboratory and Metallurgical Works, 621 F. Street, N. W. Washington, D C.

JNO. M. McCANDLESS.

Analytical and Consulting Chemist

66 Old Capitol Building, Chemist to the State Geological Survey.
Chemist to Atlanta B ard of Health.
Analyses of Ores, Phosphates, Minerals, Waters, &c. ATLANTA, GA.

JOHN SANDERSON.

F. C. S. A. I. C.

Analytical Chemist and Assayer,

MIDDLESBOROUGH, KY.

DR. HENRY FROEHLING.

Analytical and Consulting Chemist,

17 SOUTH 12th STREET.

Richmond, Va. Analyses and assays of ores of every kind, iron, steel and other metals, coal and coke, clays, marls and limestones, phosphates and fertilizers, mineral waters, waters for drinking and for boiler use, oils, commercial products, etc. Price lists of analyses sent on application. Geological and chemical investigation of mineral properties of the South.

Philadelphia Metallurgical Works.

No. 2227 Wood Street

PHILADELPHIA, PA.

JOHN F. CARTER, Manager.

ASSAVS: Gold, Silver, Copper, Lead or Iron, \$3.00; Zinc, Antimony or Tin, \$5.00; Gold, Silver and Copper or Lead \$6.00. Practical working tests of dry Gold and Silver ores. Gold mines in the South, and the economic treatment of their ores a specialty. Mines carefully examined and reported on. All kinds of the latest improved mining machinery furnished.

G. T. WOOD MFG. CO.

CONTRACTORS
Safety Electric Railway Systems.
Manufacturers and Dealers in

Electrical Specialties 136 Liberty St , New York City.

JORDAN & MacLEOD, WASHINGTON, D. C.

BALTIMORE OFFICE, 313 WATER ST Agents fo the DETROIT ELECTRIC MOTORS and DVNAMOS. MOTOR BRUSHISS in stock and made to o'der. Commutators furnished and put on. Fields and Armatures wound. Motors overhauled. Isolated plants fully equipped. Everything guaranteed. Correspondence solicited.

ADVERTISERS. CLASSIFIED OF INDEX

Paint Machinery.

P. M. Walton, Philadelphia, Pa. Thompson & Campbell, Philadelphia, Pa. W. D. Dunning, Syracuse, N. V.

Paper Mill Machinery. Holyoke Stm. Boiler & Pn Wks., Holyoke, Mass.

Patent Attorneys.

Patent Attorneys,
Knight Bros., Washington, D. C.
W. T. Fitz Gerald, Washington, D. C.
Patrick O'Farrell, Washington, D. C.
S. Brashears, Washington, D. C.
Geo. P. Whittlesey, Washington, D. C.
Du Bois & Du Bois, Washington, D. C.
Donaldson & Co., Washington, D. C.
W. W. Dudley & Co., Washington, D. C.
George E. Lemon, Washington, D. C.
Glascock & Co., Washington, D. C.
Dodge & Sons, Washington, D. C.
Champion & Champion, Washington, D. C.

Pattern Makers.

ord & McCarthy, Chattanooga, Tenn

Perforated Metal.

n & King Perfor. Co., Chicago, Ill

Phosphor-Bronze.

Paul S. Reeves, Philadelphia, Pa. Crown Smelting Co., Chester, Pa. Phosphor-Bronze Smelt. Co., Philadelphia, Pa.

Plpe. (Cast Iron and Steel.) Pipe. (Cast fron and Steet.)

Radford Pipe & Foundry Co., Cincinnati, G
Howard-Harrison Iron Co., Bessemer, Ala.

John Simmons Co., New York, N. Y.

The Glamorgan Co., Lynchburg, Va.

Wells Rustless Iron Co., Little Ferry, N. J.

Chattanooga Fdy. & P.Wks., Chattanooga, To.

Pipe. (Sewer and Culvert.) Henry Stevens's Sons, Macon, Ga.

Plpe. (Wood.) A. Wyckoff & Son, Elmira, N. Y.

Plpe. (Wrought Iron.) Judd, New London, N. C. Oil Well Supply Co., Pittsburg and New York.

Pipe Covering.

Delbert Engineer'g Co., Ltd., New Orleans, La. Magnesia Sectional Covering Co., Ambler, Pa. H. F. Watson Co., Eric, Pa. H. W. Johns Mfg. Co., New York, N. Y. A. Wyckoff & Son, Elmira, N. Y.

Pltch. (Roofing and Paving.) Ehret-Warren Mfg. Co., St. Louis, Mo Texas Coal Tar & Asphaltum Co., Dallas, Tex.

Plaster. (Wall.) Lone Star Plaster Co., Quanah, Texas. Loomis Mfg. Co., Fernandina, Fla.

Plumbers' Supplies and Tools.

Plumbers' Supplies and Tools.
Charleston Lead Co., Charleston, S. C.
Brown & King Supply Co., Atlanta, Ga.
H. Mueller Mig. Co., Decatur, Ill.
John Simmons Co., New York, N. Y.
West & Branch, Richmond, Va.
Haines, Jones & Cadbury Co., Philadelphia, Pa.
Pancoast & Maule, Philadelphia, Pa.
D. Saunders' Sons, Yonkers, N. Y.

Presses. (Baling, etc.) Central Machine Works, Cleveland, O. Central Machine Works, Clevenand, C. Cardwell Machine Co., Richmond, Va. H. Dudley Coleman Mch. Co., Ltd., New Orleans. Boomer & Boschert Press Co., Syracuse, N. Y. Van Winkle Gin & Mch. Co., Atlanta, Ga. Valk & Murdoch Iron Works, Charleston, S. C.

Valk & Murdoch Iron Works, Charleston, S. C.

Pulleys, ShaftIng and Hangers.

Todd Pulley & Shafting Wks., E. St. Louis, Ill.
Philadelphia Eng. Works, Ltd., Philadelphia, Pa.
J. B. Alfree Mg. Co., Indianapolis, Ind.
McKaig I. & S. Shaft. Wks., Cumberland, Md.
E. M. Freese & Co., Galion, O.
S. D. Warfield Co., Baltimore, Md.
Geo. R. Lombard & Co., Augusta, Ga.
Struthers, Wells & Co., Warren Pa.
P. Pryibil, New York, N. Y.
C. & A. Potts & Co., Indianapolis, Ind.
Walker & Elliott, Wilmington, Del.
Webster Mg. Co., Chicago, Ill.
Van Winkle Gin & Machinery Co., Atlanta, Ga.
Fitzsimons & Co., Cleveland, O.
Taper-Sleeve Pulley Works, Erie, Pa.
James Smith Woolen Mch. Co., Philadelphia, Pa.
Webster, Camp & Lane Machine Co., Akron, O.
H. W. Caldwell & Son Co., Chicago, Ill.
Walker Mg. Co., Cleveland, O.
H. Dudley Coleman Mch.Co., Ltd., New Orleans,
Talbott & Sons, Richmond, Va.
N. Y. Safety Steam Power Co., New York, N. Y.

Pumps. (Hand and Power.)
Otis Bros. & Co., New York, N. Y.
American Well Works, Aurora, Ill.
Deming Co., Salem, O.
Van Winkle Gin & Machinery Co., Atlanta, Ga.
U. S. Wind Engine & Pump Co., Batavia, Ill.

Pumps. (Oil.) Sherwood Mfg. Co., Buffalo, N. Y.

Pumps. (Steam.)
Delbert Engineer'g Co., Ltd., New Orleans, La.
John H. McGowan Co., Cincinnati, O.
John E. Beggs M. & Sup. Co., New York, N. Y.
Morris Machine & Iron Co., Dover, N. J.
Downie Bros. & Nevin, New Brighton, Pa.
Luion Fdy. & Mch. Works, Rockaway, N. J.
Laidlaw & Dunn Co., Cincinnati, O.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Smith & Vaile Co., Dayton, O.
Morris Machine Co., Baldwinsville, N. Y.
Van Duzen & Tifft Co. Cincinnati, O.
American Well Works, Aurora, Ill.
John Maslin & Son, Jersey City, N. J.
Henry R. Worthington, New York, N. Y.
Pulsometer Steam Pump Co., New York, N. Y.
Valley Pump Co., Eastbampton, Mass.
Dean Bros. Stm. Pump Wks., Indianapolis, Ind.
Blakeslee Mfg. Co., Du Quoin, Ill.
A. S. Cameron St. Pump Wks., New York, N. Y.
Boggs & Clarke, Syracuse, N. Y.
Punching and Shoaring Machinery.

Punching and Shearing Machinery. Long & Allstatter Co., Hamilton, O. Lloyd Booth Co., Youngstown, O. Niagara Stamping & Tool Works, Buffalo, N. Y. Bement, Miles & Co., Philadelphia, Pa. S. C. Forsaith Machine Co., Manchester, N. H.

Quarry and Stonecutting Machinery. Quarry and Stonecutting Machinery.
American Hoist & Derrick Co., St. Paul, Minn.
Copeland & Bacon, New York, N. V.
Sullivan Machinery Co., Chicago, Ill.
Morris Machine & Iron Co., Dover, N. J.
P. K. Dederick & Co., Albany, N. V.
American Well Works, Aurora, Ill.
Gates Iron Works, Chicago, Ill.
Rand Drill Co., New York, N. Y.
Ingersoll-Sargeant Rock D. Co., New York, N. V.
M. C. Bullock Myr. Co., Chicago, Ill.
M. C. Bullock Myr. Co., Chicago, Ill.
M. C. Bullock Myr. Co., Chicago, Ill. M. C. Bullock Mfg. Co., Chicago, Ill. Jeffrey Mfg. Co., Columbus, O. Webster, Camp & Lane Machine Co., Akron, O. Lincoln Iron Works, Rutland, Vt.

Rallroads.

Ratifonats.

Southern Pacific Railway Co., New Orleans, La.

Queen & Crescent Route, Cincinnati, O.

Cleveland & Canton Railroad, Cleveland, O.

Chicago, Milwaukee & St. Paul R. R., Chicago, Ill. Chicago, Milwankee & St. Paul R. R., Chicago, III. Wheeling & Lake Erie Railroad, Cleveland, O. Pittsburg & Lake Erie Railroad, Cleveland, O. Cleveland, Lorain & Wheel'g R. R., Cleveland, O. Cincinnati, Hamilt'n&Dayt'n R. R., Cincinnati, O. Valley Railway, Cleveland, O. Piedmont Air Line, Atlanta, Ga. Western Maryland Railroad, Baltimore, Md.

Western Maryland Railroad, Baltimore, Md.

Railroad Equipment and Supplies.
(New and Second-Hand.)

E. H. Staftord Co., Grand Rapids, Mich.
E. M. Hopkins, Savannah, Ga.
Pennsylvania Steel Co., New York, N. Y.
W. W. Marmaduke, Washington, Ind.
International Rail'yEquip. & Sup.Co., Yew York.
Southern Iron & Equipment Co., Atlanta, Ga.
A. T. Shoemaker, New York,
George Place Machinery Co., New York, N. Y.
George A. Evans, New York, N. Y.
J. H. Richardson & Co., Pittsburg, Pa.
A. S. Males & Co., Cincinnati, O. J. H. Richardson & Co., Pittsburg, Pa.
A. S. Males & Co., Cincinnati, O.
Robinson & Orr, Pittsburg, Pa.
New York Equipment Co., New York, N. Y.
Weir Frog Co., Cincinnati, O.
Humphreys & Sayce, New York, N. Y.
Richmond, Locomotive and Machine Works,
Richmond, Va.
H. K. Porter & Co., Pittsburg, Pa.
Baldwin Locomotive Works, Philadelphia, Pa,
Wm. Minnigerode, Lynchburg, Va.
Webster Mg. Co., Chicago, Ill.
Book Explore. (See Towns.)

Webster Mrg. Co., Chicago, H.

Real Estate, [See Tomax.]

L. Breckinridge Cabell, New York, N. Y.
McClure & Maxwell, Knoxville, Tenn.
John S. Hogan, Charleston, W. Va.

H. H. McGrew, Middlesborough, Ky. Solon B. Turman, Tampa, Fla. Perry Nugent, Greenville, Miss. Geo. A. Hyde, Washington, D. C.

Regulators. (Water Pressure.) H. Mueller Mfg. Co., Decatur, III. Hine & Robertson, New York, N. Y. Henry R. Worthington, New York, N. Y.

Road Machinery.
O. S. Kelley Co., Springfield, O. Southern Equipment Co., Chatta

Rolling Mill Machinery. Union Foundry & Mch. Wks., Rockaway, N. J. Lloyd Booth Co., Youngstown, O.

Roofing. (Felt, Tar, Paper, etc.)
A. Rasch & Son, St. Louis, Mo.
H. W. Johns Mfg. Co., New York, N. Y.
Texas Coal Tar & Asphaltum Co., Dallas, Tex.
Ehret-Warren Mfg. Co., St. Louis, Mo.
Empire Paint & Roofing Co., Philadelphia, Pa.

Empire Paint & Roofing Co., Philadelphia, Pa.

Roofing and Siding. (Metal.)

Fostoria Steel Roofing Co., Fostoria, O.

Cortright Metal Roofing Co., Philadelphia, Pa.

Acme Roofing Co., Canton, O.

Cushman Iron Co., Roanoke, Va.

Merchant & Co., Philadelphia, Pa.

J. H. Eller & Co., Canton, O.

Sims Mfg. Co., Newark, O.

Cincinnati Corrugating Co., Piqua, O.

Canton Steel Roofing Co., Canton, O. Globe Iron Roofing & Cor. Co., Cincinnati, O. Kanneberg Roofing Co., Canton, O. Holton Iron Roofing Co., New Lisbon, O. Cambridge Roofing Co., Cambridge, O. The Berger Mfg. Co., Canton, O.

Rubber Goods, N. Y. Belt, & Pack, Co., Ltd., New York, N. Y. Saws. [See Woodworking Machinery.]
Southern Saw Mfg, Co., Atlanta, Ga.
Emerson, Smith & Co., Beaver Falls, Pa.
W. F. & John Barnes Co., Rockford, Ill.
E. C. Atkins & Co., Indianapolis, Ind.

E. C. Atkins & Co., Indianapolis, Ind.

Saw MHI Machinery.
Wheland's Fdy.& Mch.Wks.Chattanooga, Tenn.
Manly Machine Co., Dalton, Ga.
Cameron & Barkley Co., Charleston, S. C.
Brennan & Co., Lonisville, Ky.
Struthers. Wells & Co., Warren, Pa.
H. P. Edmond, Richmond, Va.
H. Dadley Coleman Mehy Co., Ltd., New Orleans.
Greer Machinery Co., Knoxville, Tenn.
U. S. Machine Co., Williamsport, Pa.
Frick Co., Waynesboro, Pa.
Egan Co., Cincinnati, O.
S. C. Forsaith Machine Co., Manchester, N. H.
E. & B. Holmes, Buffalo, N. Y.

Scales.
Buffalo Scale Co., Buffalo, N. Y.

Seroll Saws. [See Woodwarking Machinery.] H. L. Beach, Montrose, Pa. W. F. & John Barnes Co., Rockford, Ill.

Shafting. [See Pulleys.]
Sheet Metal Working Machinery.
Toledo Machine & Tool Co., Toledo, O.,
Niagara Stamping & Tool Co., Buffalo, N. Y.
Geo. W. Heartley, Toledo, O.

Shingle, Lath and Stave Machinery.
[See Woodworking Machinery.] [See Woodworking Machinery.]
C. F. Thurber, Olean, N. Y.
E. & B. Holmes, Buffalo, N. Y.
Wheland's Fdy.&Mch.Wks., Chattanooga, Tenn.
Brennan & Co., Louisville, Ky.
S. Adams & Son, Rome, N. Y.
Alvin Streeter, Winchendon, Mass.
Trevor Mg. Co., Lockport, N. Y.
S. C. Forsaith Machine Co., Manchester, N. H.

skylights.

Toledo Cornice Works, Toledo, O. E. Van Noorden & Co., Boston, Mass. Soapmakers' and Butchers' Machinery Schubert & Co., Brooklyn, N. V. H. Wm. Dopp & Son, Buffalo, N. Y.

sprinklers. (Automatic.) Neracher & Hill Sprinkler Co., Warren, O. Providence St. & Gas Pipe Co., Providence, R. I.

Standplpes.
Holyoke Stm. Boiler & Fu Wks., Holyoke, Mass, Aultman & Taylor Machinery Co., Mansfield, O. Sharon Boiler Works, Ltd., Sharon, Pa. U. S. Wind Engine & Pump Co., Batavia, Ill. Ravenna Boiler Works, Ravenna, C. Enterprise Boiler Co., Youngstown, O. Philadelphia Eng. Wks., Ltd., Philadelphia, Pa.

Steam Feed. (For Saw Mills.)

Dake Engine Mfg. Co., Grand Haven, Mich
Soule Steam Feed Works, Meridian, Miss.

Steam Riding Galleries. Armitage-Herschell Co., Hornellsville, N. Y. Owen & Margeson, Hornellsville, N. Y.

Steam Shovels. [See Dredges and Excavate Steamship Lines.

Richmond & York River Line, Baltimore, Md. Richmond & York River Line, Baltimore, Md. Murrell's Line, Brunswick, Ga. Merchants & Miners' Trans. Co., Baltimore, Md. Furness Line, Baltimore, Md. Baltimore Storage & Light. Co., Baltimore, Md. Baltimore Storage & Light. Co., Baltimore, Md.

Steel Laths.

Bostwick Metal Lath Co., New York, N. Y.

Steel, (Mushets.)
B. M. Jones & Co., Boston, Mass.
Steel Ralls. [See Railroad Equipment and ia Steel Co., New York, N. V.

steel Rall Manufacturers, [See Railroad Equipment and Supplies.]
Pennsylvania Steel Co., Steelton, Pa.

Pennsylvania steel Co., Steelion, Pa.

Tanks. (Iron and Steel.)
Holyoke Stm. Boiler & Pn Wks., Holyoke, Massa
Ravenna Boiler Works, Ravenna, O.
Tudor Boiler Mg. Co., Cincinnati, O.
Enterprise Boiler Co., Youngstown, O.
Geo. R. Lombard & Co., Augusta, Ga.
Valk & Murdoch Iron Works, Charleston, S. C.
Golley & Finley Iron Works, Limited, Sharon, Pa.

Sharon Boiler Works, Limited, Sharon, Pa. Tanks. (Wood.)

Williams Mfg. Co., Kalamazoo, Mich. U. S. Wind Engine & Pump Co., Batavia, Ill. Van Winkle Gin & Machinery Co., Atlanta, Ga.

Tannery Outfits. Struthers, Wells & Co., Warren, Pa Tapping Machines. (For Water Mains.) H. Mueller Mfg. Co., Decatur, Ill.

Tarred Goods.

Ehret-Warren Mfg, Co., St. Louis, Mo. Texas Coal Tar & Asphaltum Co., Dallas, Tex

Texas Coal Tar & Asphaltum Co., Dallas,
Textile Machinery and Supplies,
Bridesburg Machine Works, Philadelphia,
G. W. Arnold, Troy, N. Y.
Kilburn, Lincolo & Co., Fall River, Mass.
S. A. Dudley, Taunton, Mass.
Atlas Mfg. Co., Newark, N. J.
F. H. Potter, Providence, R. I.
Henry Popham & Son, East Newark, N. J.
Brown & King Supply Co., Atlanta, Ga.
Smith, Saunders & Collins, Newton, N. C.
James Smith Woolen Mch. Co., Philadelphia
Lowell Machine Sino, Lowell, Mass.
Nye & Tredick, Philadelphia, Pa.

American Supply Co., Providence, R. I. Crompton Loom Works, Worcester, Mass. George Draper & Sons, Hopedale, Mass. Whitinsville Spin. Ring Co., Whitinsville, Mass.

Tinners' and Roofers' Supplies. Berger Bros., Philadelphia, Pa

Tires. Standard Steel Works, Philadelphia, Pa. Tools for Machinists.

L. S. Starrett, Athol, Mass. C. F. Richardson, Athol, Mass. Pancoast & Maule, Philadelphia, Pa. Towns,

OW IIS.

Washington, La.
Rocky Mount, N. C.
Claremont, Va.
Curtis Bay (Baltimore), Md.
Columbus City, Ala.
North Wilkesboro, N. C.
Front Royal and Riverton, Va.

Trucks. [See Wheelbarrows and Trucks.]

Turbines. [See Water Wheels.]

Valves,
H. Mueller Mfg. Co., Decatur, Ill.
Jenkins Bros., New York, N. Y.
Ludlow Valve Mfg. Co., Troy, N. Y.
Wm. Powell Co., Cincinnati, O.
John H. McGowan Co., Cincinnati, (

Ventilators. [See Blowers and Exhaust

Fans.]
E. Van Noorden & Co., Boston, Mass.
Wagon Bullders' Machinery and
Supplies. R. M. Whitney, Olean, N. Y. Williamsport Machine Co., Williamsport C. O. & A. D. Porter, Grand Rapids, Mic Cordesman, Meyer & Co., Cincinnati, O. H. L. Beach, Montroze, Fa.

Washers. Littleford Bros., Cincinnati, O. Milton Mfg. Co., Milton, Pa.

Water Closets, Haines, Jones & Cadbury Co., Philadelphia, Pa.

Water Motors,
S. D. Warfield Co., Baltimore, Md.

Water Wheels and Turbines,
Burnham Bros., Vork, Pa.,
Munson Bros., Utica, N. Y.
T. C. Alcott & Son, Mt. Holly, N. J.
Jas. Leffel & Co., Springfield, O.
Stilwell & Bierce Mig. Co., Dayton, O.
S. Morgan Smith, Vork, Pa.
Kilburn, Lincoln & Co., Fall River, Mass.

Kilburn, Lincoln & Co., Fall River, Mass, Water Works and Sewernge, S. W. Frescoln, New York, N. Y. J. D. & Wm. G. Moler, Charleston, W. Va. John N. Adams, Richmond, Va. John C. Chase, Wilmington, N. C. Olin H. Landreth, Nashville, Tenn. Calboun & Co., Chicago, Ill. R. F. Hartford, Atlanta, Ga. von Schon & Garner, Fredericksburg, Va. Frederick J. Amweg, Philadelphia, Fa.

Well Tools and Supplies. (Artesian.)
Oil Well Supply Co., Pittsburg and New York.
Golley & Finley Iron Works, Lima, O.
American Well Works, Aurora, Ill.
Rust Well Works, Ithaca, N. Y.
Williams Bros., Ithaca, N. Y.
Deming Co., Salem, O.

Well Tools and Supplies, (Oil and Nat-Oil Well Supply Co., Pittsburg and New York,

Wheelbarrows and Trucks, P. K. Dederick & Co., Albany, N. Y. Akron Tool Co., Akron, O. Grand Rapids Wheel, Co., Grand Rapids, Mich. Geo. P. Clark, Windsor Locks, Conn. G. L. Stuebner & Co., Long Island City, N. Y. C. O. & A. D. Porter, Grand Rapids, Mich.

Wind Engines. U. S. Wind Engine & Pump Co., Batavia, Ill. Van Winkle Gin & Machinery Co., Atlanta, Ga.

Wire, Wire Rope, Barbed Wire, etc. Trenton Iron Co., Trenton, N. J. Williamsport Wire Rope Co., Williamsport, Pa. Ludlow-Saylor Wire Co., St. Louis, Mo. W1re Goods, Hartman Mfg Co., Beaver Falls, Pa

Hartman Mig Co., Beaver Pails, Pa.
H. Balderston & Son, Baltimore, Md.
Toledo Wire & Iron Works, Toledo, O.
J. E. Bolles & Co., Detroit, Mich.
Fred. J. Meyers Mfg, Co., Covington, Ky.
Dufur & Co., Baltimore, Md.
Ludlow-Saylor Wire Co., St. Louis, Mo.

Dufur & Co., Baltimore, Md.
Ludlow-Saylor Wire Co., St. Louis, Mo.

Woodworking Machinery.
Avery Supply Co., Louisville, Ky.
Bentel & Margedant Co., Hamilton, O.
E. & B. Holmes, Buffalo, N. Y.
Linham Dado Machine Co., Mansfield, O.
Ober Lathe Co., Chagrin Falls, O.
H. B. Smith Machine Co., Smithville, N. J.
Indiana Machine Works, Fort Wayne, Ind.
John A. White Co., Dover, N. H.
Brennan & Co., Louisville, Ky.
Alvin Streeter, Winchendon, Mass.
J. M. Marston & Co., Boston, Mass.
J. M. Marston & Co., Boston, Mass.
J. Pryibil, New York, N. Y.
Greer Machinery Co., Knoxville, Tenn.
U. S. Machine Co., Williamsport, Pa.
Smith-Courtney Co., Richmond, Va.
Pennsylvania Mch. Co., Ltd., Philadelphia, Pa.
Globe Machine Works, Cincinnati, O.
The Egan Co., Cincinnati, O.
The Egan Co., Cincinnati, O.
The Egan Co., Cincinnati, O.
The My Hermance Co., Williamsport, Pa.
J. S. Graham & Co., Rochester, N. Y.
S. C. Forsaith Machine Co., Manchester, N. H.
Williamsport Machine Co., Milliamsport, Pa.
Samuel J. Shimer, Milton, Pa.
Goodell & Waters, Philadelphia, Pa.
W. F. & John Barnes Co., Kockford, Ill.
H. L. Shepard, Cincinnati, O.
Josiah Ross, Buffalo, N. Y.

Connellsville Standard Bee-Hive Coke Ovens.



Gates Bros. & Sharp,

Coke Plants Complete

Railroad Work, &c.

Correspondence Solicited.

CORINTH. Preston County, W. Va.

JULIAN KENNEDY,

Consulting and Contracting Engineer, HAMILTON BUILDING, PITTSBURCH, PA.

Blast Furnaces, Bessemer and Open Hearth Steel Works, Rolling Mills, Steam and Hydraulic Machinery, Heating Furnaces, Gas Producers, &c. BRANCH OFFICE OF THE LATROBE STEEL WORKS.

ALL PLANS, specifications, estimates, etc., are based on ACTUAL EXPERIENCE in large and properly built and managed works. FULL INSTRUCTIONS given on all points relative to Chemical, Phosphate or Soap Works.

HERMAN POOLE, CHEMICAL ENGINEER, Temporary address, care Maritime Sulphite Pulp Co., 153 W. 23d St., New York.

S. W. FRESCOLN,
ENGINEER AND CONTRACTOR,
WORLD BUILDING, NEW YORK.

Bridges, Iron Structures, Wairr Works, Sewersge and Street Work, Blast Furnace and Steel Plants; Steam, Electric and Cable Ry's.

BONDS NEGOTIATED. COMPANIES ORGANIZED. ESTIMATES FREE

AMERICAN

DESIGNERS AND BUILDERS of IRON and STEEL BRIDGE AND
IRON COMPANY
BIRDGES and VIADUCTS for
HIGHWAYS and
RAILROADS, IRON FURNACE

ENGINEERS: {CHAS. C. WENTWORTH. | CHAS. C. WENTWORTH. | PLANTS. |

ENGINEERS: {CHAS. C. WENTWORTH. | PLANTS. |

FOR Also, MACHINISTS AND FOUNDERS | ROANOKE, VIRGINIA. |

ROANOKE, VIRGINIA. |

FOR Also, MACHINISTS | PLANTS. |

FOR Also, MACHINISTS | PLANTS. |

FOR Also, MACHINISTS | PLANTS. |

FOR Also, MACHINISTS | PLANTS | PLANTS |

FOR Also, MACHINISTS | P

Pig Iron.
Bar Iron.
Structu al Iron and Steel.
Sheet Iron and Steel.
Lesd and Shot.
Iron Fence Material.
Horse Shoes.
Nails.,
Steel Cast 11gs.

HARRIS & THORNTON.

Manufacturers' Agents and Lumber Brokers,

No. 3 Arcade, Chattanooga, Tenn.



REGITABLE MARKS. PHOSPHOR-BRONZE

INGOTS, CASTINGS, WIRE, SHEET &c. THE PHOSPHOR BRONZE SMELTING CO. LIMITED 512 ARCH ST. PHILADELPHIA PA.U.S.A.

ORIGINAL MANUFACTURERS OF PHOSPHORBRONZE IN THE UNITED STATES AND SOLE
MAKERS OF "ELEPHANT BRAND" PHOSPHOR-BRONZE.

THOS. F. BISHOP & CO.

Manufacturers of All Kinds of

MACHINERY

AND DEALERS IN SECOND-HAND MACHINERY.

Engines, Boilers, Heaters, Pumps, Injectors, Brass Fittings, Hoisting Machines, Shafting, Couplings, Pulleys, Hangers, Steam Pipe Fitting, Etc. Emery Wheels, Busing Wheels, Emery Stands for Nachine Shap and Foundry Use.

211 EAST PEARL STREET,

CINCINNATI, OHIO.

172 anufacturers' Permanent Exhibition.

Over \$60,000 Worth of Business Done Through This Agency in Less
Than Three Months.

MANUFACTURERS of any kind of goods, machinery or other fabrics requiring representation in
the South are invited to correspond with the undersigned.

STEAM being continually kept up, all machinery is constantly moving.
PRIVATE ROOMS for exhibitors to meet purchasers.
PRIVATE ROOM for Architects, Engineers, Contractors, Builders, etc.
EXPERTS KEPT to explain manufactures and push sales in each department.
LOCAL AND GENERAL commercial reports, trade journals, private writing rooms, etc.
A new and unique method of advertising and getting your goods drummed at a nominal cost.
For full particulars, spiply to

JOHN N. ADAMS S N. 10th St., Richmond. Va.

Exhibits also taken for the Second Grand State Exposition, of Virginia; commencing October 6, to October 26, both days inclusive.

BRYANT IMPROVED AUTOMATIC **High-Speed Safety Engine.**



THE WHITMAN & BARNES MFG. CO.

Syracuse, N.Y. Syracuse, N.Y.
Automatic governor
non-explosive
boiler, no extra insurance, no engineer, no sparks,
ashes or smoke.
Specially designed
for those wantin
power from 2 to 5
h.p. This is the
safest, cheapest
and most reliable
Fuel—kerosene oil or natural gas

NOTICE TO STEAM USERS.

Wilcox Boiler Cement stops leaks in boilers nd steam pipes. Prices raised July 1, as follows: Half-pound tins 75 cents; one pound \$1.25, and ve pound \$6.00, postage or express prepaid. he usual liberal discounts to agents. Sole nanufacturers.

SALEM BATTERY CO., SALEM, VA.

ATTENTION,

Architects and Builders!

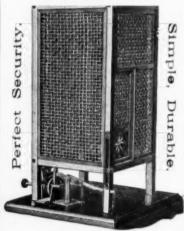
Did you know that pressed and ornamental rick equal to St. Louis and Washington brick ere manufactured in the South?

THE COALDALE PRESS BRICK alone enjoy that reputation, having won the first prize at the Alabama State Fair and Augusta (Ga.) Exposition. Situated upon the great L. & N. R., we insure favorable rates of transportation to all parts of the country. Satisfaction guaranteed, and prices lower than anywhere else. Write for catalogue and prices, or call at our city office. 2022/2 Flist Avenue, Birmingham, Ala.

COALDALE BRICK & TILE CO.

By Jno. W. Sib'ey, Treas.

SAFETY ELEVATOR BRAKE AND SELF-CLOSING DOOR.



Elevator cannot move when door is open. Can eattached to any Elevator. Territory for sale.

SAPETY ELEVATOR BRAKE COMPANY, 1231 Masonic Temple,

JAMES H. CURRAN,

Passenger and Freight Elevators, DUMB WAITERS.

Office & Works, 132 W. Second St., CINCINNATI, O.
Write for Circular.

Serie 25, 1876. USE. Reissued July 25, Ξ 교 Hand 6,000 18, 1871. OVER

JAMES BATES,

PATENTEE,
Nos. 1, 3 and 5 President Street, BALTIMORE, MD.

"THE SINTZ"
Gas and Gasoline Engines.

GAS ™ GASOLINE ENGINES STATIONARY and PORTABLE. All Sizes.



Dwarfs in Size, but Giants in Strength.

GAS & GASOLINE ENGINE CO. Cincinnati, Q.

After being on the market 6 years,
The Aome Still Loads
In Durability, Efficiency and Fuel Economy



Sole Builders. ROCHESTER, N. Y.
Send for Illustrated Catalogue.

Bell's Improved Steam Hammer



No. 1, 6ln. 16ln. No. 2, 8ln. 18ln. No. 3, 10ln. 22ln. No. 4, 12ln. 27ln.

Strikes Blow No. 1, 2,000 lbs No. 2, 4,000 ⁴⁶ No. 3, 6 000 ⁴¹ No. 4, 10,000 ⁴⁶

Illustrated Cata-logue and Pri es sent on application

IF YOU USE **Power Hammers**

BELDEN MACHINE CO., New Haven, Conn.



THE BRIDESBURG MACHINE WORKS

TEXTILE MACHINE MAKERS.

Worsted Machinery, Wool Machinery, Cotton
Machinery, Built to Order.
HIGH GRADE | WILLIAM E. McGILL,
WORK ONLY. | Bridesburg, Philada., Pa
nepairs for Bridesburg Machinery furnished promptly

Stow Flexible Shaft



Invented and Manufac-tured by the

STOW MFG. CO. Binghamton, N.Y.

tablished in 1875. For Tapping and Reaming Stay Bolt Holes in

BOILERS.

Portable Brilling.

H.A.WILLIAMS MFG.CO.

SOLE MANUFACTURERS OF THE WILLIAMS DRAPER OF SYPHON TEEL AND BRASS DILERS AND LAMPS.
334 CONGRESS ST. SSFULTON ST.
BOSTON MASS THE NEW YORK STEEL CAN

THE SIMPSON STORAGE BATTERY.

ILLUSTRATED CATALOGUE



EACH CELL 1, 2, 3 or 4 cells in oak case, \$1 25 per cell. E. F. M., 2 3-10 volts.
Capacity, 20
ampere hours
per cell.

Simpson Elec. Mfg. Co., 39-41 W. Washington St., Chicago.

H. WARD LEONARD & CO.

136 Liberty Street,

NEW YORK CITY.

Bulk Electric Contractors

COMPLETE PLANTS OF EVERY KIND,

Including Buildings, Steam Plants. Water Powers, Electric Generating Plants, Pole Lines, Underground Work, Read Beds, Bridges, Motors, Inside Wiring, etc.

Having no agencies and no connection with any manufacturing concern, we install any apparatus and any system desired.

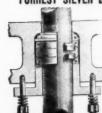
Nine years' experience



OILLESS BEARINGS.

Metalined Loose Pul-ley Bushes require no o.l or other lubricant, either at the start or ocassionally afterwards, vill run perfectly dry or years. Send for oose Pulley Circu ar

FORREST SILVER BRONZE PACKING.



G. L. Stuebner & Co.



Self-Dumping Steel & Iron Hoisting Tubs,

Side and Bottom Dumping Cars for Coal Elevators, Iron Wheelbarrows, Hoisting Blocks, Bottom-dumping Tubs for Coaling Locomotives, &c. LONE ISLAND SITY, N. Y. Send for circular and prices.

SOAP-DIES SOAP SCHUBERT & CO. CANDLE &CATALOGUES FREE

IRON AND STEEL

MADE

RUSTLESS. ESS WATER PIPE

Send for Catalogue.

THE WELLS RUSTLESS IRON CO.

Little Ferry, N. J.

SEND FOR NEW PRICE

GEM WIRE

Coat # Hat Hooks



VAN WAGONER & WILLIAMS CO.

14 Warren St., New York. Cieveland, Ohlo.

Catalogue of Spring Hinges, Door Springs, Wire Coat and Hat Hooks, Blind Adjusters, &c., on application.

HAND STAMPS, Rubber, Brass and Steel.

CHECK PUNCHES STENCILS Etc. CONSECUTIVE and DUPLICATE NUMBERING MACRINES Mail orders given special attention. Send for Catalogue and Price List. Refers New York office of this paper. ERNEST COATES, 48 Broad St., New York.

WIRE SCREENS, WIRE CLOTH, And All Kinds of WIRE WORK for Churches, Institutions, etc.

H. BALDERSTON & SON,

(ESTABLISHED 1793)
122 South Calvert Street, BALTIMORE, MD.

WIRE RAILING

ORNAMENTAL WIRE WORKS.

DUFUR & CO., 311 N. Howard St., Baltimare. Wire Railing for Cemeteries, Lawns, Gardens Offices and Balconies: Window Guards, Tree Guards Wire Cloth, Sieves, Fenders, Cages, Sand and Coal Screens, Iron Bedsteads, Chairs, &c.



Work for Interior and Exterior Decorations a Specialty,

ALLX. D. CUNNY. **OUEEN CITY PATTERN WORKS.**

Patterns made to order for Machinery, Stove and Architectural Work. Metal Letters made and a large stock always on hand.

101 and 103 E. Second St., Cincinnati, Ohio. Agent for White's Flexible Metallic Fillet.

MODEL and PATTERN Making in all Branches. SPECIAL ATTENTION TO GEARING.

Correspondence Invited. Market and Cowhart Streets, CHATTANOOGA, TENN.

WEST & BRANCH,

RICHMOND, VA.

Fine Plumbing and Ventilating. Heating by Steam or Hot Water.

Manufacturers' Agent for BOILERS, BLOWERS and other goods in our line. Write for prices.



THE Lackawanna Grease Cup

Has a wide reputation as the CLEANEST, MOST EF FECTIVE and MOST ECONOMICAL device on the market for the lubrication of machinery bearings. Lib ral Discount to the Tr-de.

MANUFACTURED BY LACKAWANNA LUBRICATING CO.

Scranton, Pa-



The only Automatic Injector that is operated ntirely without the use of any globe valves.

TO START-Open Valve K. TO STOP-Close Valve K.

It can be used either as a lifter or non-lifter.
It is adopted by the largest Engine Builders, and is for sale by the LARGEST SUPPLY HOUSES IN THE U.S.
Ask your dealer or send to us for circular and prices.

JENKINS BROS., 71 John St., New York.

· ERIE, PA. Manufacturers of

& BOILERS. ERIE ENCINE WORKS.

Stow Flexible Shaft Co., Limited,



STARRETT'S
Fine Tools
Warranted Accurate—Best in
Workmanship—Latest in design—
Finest in Finish—Send for Catalogue.

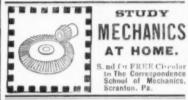
L. S. STARRETT, Athol, Mass., U. S. A.

LEVELING & SQUARING INSTRUMENT



C. F. RICHARDSON, Athol, Mass.

Manufacturers of Iron Levels and Carpenters' and Architects' Transits.



STUDY

F. H. C. MEY

Chain Belting Engineering Works

APPROVED APPLIANCES FOR

vating, Conveying and Transmi on of Power, and Manufacturer of Elevator Buckets. pecially adopted for elevating and reying Ore, Coal, Coke, Broken e, Sand, Gravel, &c.





SWING and BRIDGE CRANES

OVERHEAD TRACK. SWITCHES, Etc.

The Taper-Sleeve Polley Works

OF ERIE, PENNSYLVANIA,

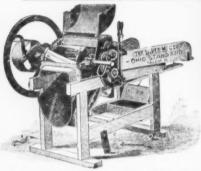
of Erie, Pennsylvania,
was organized and begau the Manufacture of Wooden Pulleys, both
whole and spilt, in 18:3, and are the
oldest Manulacturers of Wooden Pulleys for the trade by nearly ten years,
not only in this Country but in the
World. All other makers of Wood
Puleys without exception are copysits and imitators of our work.
We had a spiendid exhibit at the
Centennial in Philadelphia in 1876,
and there were no other exhibitors of
Wooden Pulleys at that fair.
We are the oldest Manufacturers of
Clutch Pulleys, Cut off Couplings, and
Dead Pulleys, also Shafting, Hangers
and Couplings.

SALASEE PLASTERING FIBER.

"This fiber was used exclusively in the building of the TAMPA BAY HOTEL CO., because it made better work than any article offered in any market."—J. A. WOOD, Architect, 153 Broadway, New York. Address, LOOMIS MFG. CO., Fernandina, Fla.

EXHAUST TUMBLERS WIRE NAIL MACHINES

WM. A. SWEETSER.



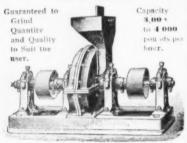
The "OHIO" Ensilage and Fodder Cutters.

LARGE AND COMPLETE LINE OF Special Ensilage and General Purpose Machines

The SILVER MFG.CO.

SALEM. OHIO.

The Cogswell Mill



M. C. COCSWELL.

18 Vesey Street,

NEW YORK (ITY

THE TOLEDO MACHINE & TOOL CO.

Presses, Dies, Shoot Metal Tools

SPECIAL MACHINERY.

THE TOLEDO MACHINE & TOOL CO.



H. DUDLEY COLEMAN MACHINERY COMPANY,

CHTIMILI

NEW ORLEANS, LA.

- MAKERS AND DEALERS IN -

ENGINES, BOILERS, PRESSES,

Corn and Saw Mills, Shafting, Pulleys, Bearings, Belting.



and

Capacity 6 Bushels to 75 Bushels Per Hour. MILLS FOR FLOURING MILLS
Capacity from 20 to 100 barrels per day.

Mills for Grinding PHOSPHATE ROCK.

WATER WHEELS, SHAFTING, PULLEYS, HANGERS, ETC.

MUNSON BROS., UTICA, N. Y., U. S. A.

SEND FOR NEW CATALOGUE, JUST OUT, DESCRIBING

WILLIAMES' VACUUM SYSTEM OF STEAM HEATING

ADVANTACES CUARANTEED.

Relief of back pressure upon engine. Positive circulation of steam throughout the entire system. Dispenses with all cracking and hammering noises, and saving repair bills. Maximum efficiency of the present piping with saving of from ten to forty per cent. of fuel—exact percentage can be determined after an examination of the plant.

Patent Sustained in the U. S. Circuit Court. est Factories, Mills, Electric Light Companies, Market Houses, Office Buildings, Schools, Theatres,

WARREN WEBSTER & CO.
Managers and Sole Licensees for the sale of Patent Rights in the United States

Main Office and Works, 491 N. 3d Street, Philadelphia.
Patentees, Proprietors and Managers of the WEBSTER VACUUM FEED WATER HEATER AND PURIFIER. Send for Catalogue.

Complete working drawings of KILNS of all sizes furnished to customers free of



B. F. STURTEVANT CO., 34 Oliver Street, BOSTON, MASS. St., New York. 16 S. Canal St., Chicago. 145 N. Third St., Philadelphia, Pa.

FIRE BRICK

BLAST and GAS FURNACES, COKE OVENS. &c. SOUTHERN FIRE BRICK WORKS.

P. O. Box 290, Correspondence solicited.

KINGAN & CO. PORK PACKERS

RICHMOND, VA.

PURE LARD and PURE LARD OIL.



LOUISIANA RED CYPRESS. 135 ROUND TANKS. MICHICAN WHI E PINE. WILLIAMS MFG. CO. KALAMAZOO MICH,

QUEEN CITY SUPPLY CO., PUCHTA, PUND & CO

Nos. 161, 163 & 165 West Pearl Street, Cincinnati, Ohio.

Factory, Machine Shop and Mill Supplies.

nt for B. F. Sturtevant Co., Blowers and Exhausts; Boston Belting Co., Rubber Goods nds; Jewell Belting Co., Leather Belt; Jno. A. Roeblings Sons, Wire Rope; Grant Corun-eel Co., Emery Wheels; Magnolia Metal Co., Magnolia Babbitt Metal.



Covert Web Goods, Rope Goods, Snap and Chain Goods

bear the above TRADE MARK, and are sold by all LEADING JOBBERS at Manufacturers' prices.

Covert Mfg. Co., WEST TROY

NEW YORK BELTING & PACKING CO.

JOHN H. CHEEVER, 15 Park Row, N. Y.

UBBER BELT

WEIGHT-HOOD LBS.

LENGTH-2050 FT

3 FEET

Oldest and Largest Manufacturers in the U. S. OF

VULCANIZED RUBBER FABRICS,

RUBBER BELTING, PACKING AND HOSE.

Rubber Mats, Mattings and Stair Treads.



EXTRA RUBBER AND COTTON HOSE.

Solid Vulcanite Emery Wheels.



BCLIPSE RAWHIDE AND TANNED LACING.

Manufactured by HENRY POPHAM & SON, East Newark, N. J.



The Gandy Belting Co.





NICETOWN PHILA 49 DEY ST. NEW YORK.

n Machinery, Ewart Detachable Link

Western Connection: LINK BELT MACHINERY CO., Chicago.

EFFREY CHAIN BELTING

Malleable, Roller, Steel, Wrought # Special Chains

SEND FOR

REDUCED PRICE LIST.



Elevating Conveying Machinery

THE JEFFREY MFG. CO., Columbus, Ohio.

Chicago Branch, 48 S. Canal St. New York Branch, 163 Washington St

DHOSPHATE MACHINERY AND SUPPLIES, ENGINES, BOLERS, AW MILLS, and a full line of BAR IKON, IRON FIFE, VALVES, and IRON FIFE,



IMPROVED FERTILIZER MIXING MACHINES

FOUR SIZES.

Capacities from 20 to 100 tons per day.

mplete Fertilizer Plants Designed, Erecte

C. H. DEMPWOLF & CO., York, Pa.

Breakers. Buhr Mills, Elevators, Pulleys, Etc.

WILMINGTON, DEL.

The Charleston Lead Co.

CONTRACTORS FOR

ACID CHAMBERS. SULPHURIC

WITH ALL THE LATEST APPROVED APPLIANCES.

Parties contemplating a change from Sulphur Burners to Pyrites will consult their own interests corresponding with us. A corps of skilled lead burners in our employ sent to any point on application.

MANUFACTURERS OF

SHEET LEAD AND LEAD PIPE FOR ACID CHAMBERS, made only from brands of Pig Lead that have been carefully analyzed and found suitable for this purpose.

A large stock of ALL STANDARD SIZES AND WEIGHTS OF PIPE AND SHEET always on hand. PLUMBERS ORDERS filled at sight. PIG LEAD for use of Water Works, Gas Works, &c., for sale.

WORKS, - STONO STATION, - S. C. R. R.

Office, 35 Broad Street,

- CHARLESTON, S. C.



ong & Allstatter Co HAMILTON, OHIO.

Single, Angle-Bar, Gang, Hori-

unches and Shears,

Over 300 Sizes.

POWER CUSHIONED

HAMMER.



The LLOYD BOOTH CO., Youngstown, Ohio.

BAR.

MUCK SHEET

AND PLATE



SHEARS. ORE MILLS ROLL LATHES. AND AND CHILL ROLLS

Manufacturers of IRON AND STEEL WORKS MACHINERY.

NIAGARA STAMPING & TOOL CO.

Machines & Tools.

B. 8



Superior, Cor. of Randall St., Buffalo, N. Y.

Milling Machines.

From 36 inches square by 12 feet long, by 5 feet long. * * *



MILLING

and REPAIR YOUR MACHINERY



MANUFACTURED BY DRAPER MACHINE TOOL CO.

uccessors to LATHE & MORSE TOOL CO.).

Worcester, Mass., U. S. A.

POWER LATHES

ESTABLISPED 1845. INCORPORATED 1892.

T.K. Carey & Bros.

BALTIMORF, MD.



Friction Disk Drill

FOR LIGHT WORK Has these great advantages The speed can be instantly changed from 0 to 1600 without stopping or shifting belts. Fower applied can be gradu ated to drive with equal safe ty the smallest or largest drills



W. F. & JOHN BARNES CO. 221 Ruby Street, Rockford, III.

HOOPES & TOWNSEND.

Philadelphia, Pa.

MAKE RIVETS

No. 9 x 1/4 in. to 1 1/2 x 42 in.

THE HOOPES & TOWNSEND CO, Wilmington, Del.

A LONG FELT WANT SUPPLIED.

Power Hammer that is Controllable, Efficient and Durable.

TAKES THE MINIMUM OF POWER AND GIVES THE MAXIMUM OF EFFICIENCY.

The operator can control perfectly the force of the first or any succeeding blow and stop the hammer instantly.

OR CATALOGUES AND PRICES ADDRESS THE HACKNEY HAMMER CO.

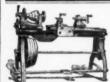
Johnson Street. CLEVELAND, OHIO.

have been in the market and during all that time have been acknowledged the very best. The material we use and our method of construction are

BRADLEY & COMPANY,

2000 IN USE.

FOR 20 YEARS these Hammers



Improved Screw Cutting Feet and Power LATHES.

Presses, Shapers, Band Circula Saws, Machinists' Tools and Su on trial. Catalogue on applicat

THE SEBASTIAN-MAY CO. 182-188 Highland Ave., SIDNEY, OHIO



30 in., 42 in. and 60 in. PULLEY LATHES.



For Simultaneously Boring and Turning Pulleys. th Straight and Crowning Face, Cone Pullies, Gear Blanks and a Variety of Other Work. MANUFACTURED BY

THE HENLEY MACHINE TOOL WORKS, Richmond, Ind., U. S A.
Write for descriptive circulars and catalogue.



SEBASTIAN LATHE CO.

116-118 Culvert Street, Cincinnati, O. Manufacturers of Foct and Power

ENGINE AND SPEED LATHES,

For General Machine and Jobbing Shop, Electrical and Experimental Work.

Dealers in Machinists' Tools and Supplies.

EMENT, MILES & C

PHILADELPHIA, PA.



Metal-Working Machine Tools For Railroad Shops, Locomotive and Car Builders, Machine ocomotive and uilders, Ma hops, Steam F hip Yards, I hops, Bridge

PORTER & CO., PITTSBURGH, PA., U.

Light Locomotives and Noiseless Motors

Memo.—All work STEEL FITTED and built to duplicate system. Extra parts kept in stock.

We keep on hand, ready for immediate shipment, LOCOMOTIVES AND MOTOES OF

SEVERAL SIZES, WIDE OR NABROW GUAGE.



Richmond Locomotive & Machine Works, Richmond, Va. BALDWIN LOCOM



tandard Designs or to meet views of purchasers.

MOTORS Street Railways, Tra

Stationary Engines BOILERS,

nd for Catalogues, Specifics

STEEL RAILS

PENNSYLVANIA

Standard Sections Light Sections Street Rails

Fish Plates, Frogs, Switches

STEPHEN W. BALDWIN

16 lbs. Full Size.

STEEL COMPANY

50 to 80 lbs. per yard 16 , 45 , 30 , 88 , Bolts & Nuts, and Crossings.

NO.2 WALL STREET NEW YORK N.Y.

70 Kilby Street, Boston, Mass.

/ILLIAMSPORT WIRE ROPE CO. Iron, Steel and Galvanized STREET CABLES A SPECIALTY. WILLIAMSPORT, PA. olicited with Southern Coal and Quarry

WIRE ROPE RON NO STEEL WIRE OF ALL K TRENTONIRON CO. COOPER HEWITT&CO 17 BURLING SLIP

THE AMERICAN IMPROVED ANTI-FRICTION METAL CO.



mical metal.

is Self-Lubricating.

is tougher and more durable than all other metals.

is tougher and more durable than all other metals.

is the best metal known where great pressure is required,

runs with leas friction than any other metal.

will stand the highest rate of speed and will not heat or cut.

neral use everywhere and gives universal satisfaction.

O ice and Works, MOBILE ALA. New York Office, 11 Wall Street. Agencies is all the Principal Cities.

Jf. F. MORROW, Agent, Chester, Pa.



Locomotive Engines, Locomotives for Logging

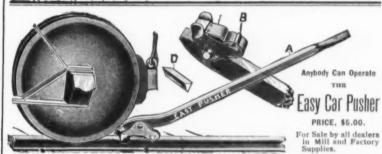
Adapted to every variety of service, and built accurately to standard gauges and templates. COMPOUND LOCOMOTIVES.

Steam Tramway Motors, Mine Locomotives, Furnace Locomotives. Burnham, Williams & Co., SOO N. BROAD STREET, Philadelphia, Pa.

PHILADELPHIA.

A. WHITNEY & SONS, Chilled Wheels for Engines and Cars,

Cast in the Whitney Contracting Chill and Warranted Smooth and Round With STEEL-TIRED WHEELS WITH CAST-IRON CENTRES, SPOKE OR PLATE PATTERN.



Manufactured by E. H. STAFFORD CO., Grand Rapids, Mich.

BALTIMORE MALLEABLE IRON & STEEL CASTING CO.

STEEL AND WROUGHT FORGINGS

st Refined Air Furnace Iron Made.
be given to Fine Steel Bicycle and Tool Work.
BALTIMORE, MD.

FROM 1-4 TO 15,000 POUNDS WEIGHT.

True 'o pattern, sound, solid, free from blow-holes and of unequalled strength. Str-nger and more durable than iron forgings in an 'position or for any service whatever.

60,000 CRANK SHAFTS and 50,000 GEAR WHEELS of this Steel now running prove this,
Cross-Heads, Rockers, Piston-Heads, &c., for Locomotives.

STEEL CASTINGS of every description,
Send for Circulars and prices to

CHESTER STEEL CASTINGS CO.

MACHINE SHOP AND BLACKSMITH EQUIPMENTS

A SPECIALTY.

Engine Lathes, Chucks, Drill Presses, Shaping Machines, Power Hammers, Bolt and Nut Machinery, Portable Forges, &c. Pressure Blowers and Emery Grinding Machinery. Send for Catalogue of Machine Tools, stating exactly what is required so that prices may be quoted. Delivered your station if so desired.

W. E. DREW, Agent.

S. C. FORSAITH MACHINE CO., Machinery Dealers, Manchester, N. H.

The Oil that Saves Most Power Fuel and Money.

MAIN OFFICE AND SALESROOM,

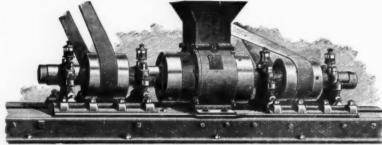
213 SMITH'S WHARF, BALTIMORE, MD. Send for descriptive pamphlet "LIGHT ON LUBRICATION."

LUBROLEINE OIL COMPANY,

Refiners of Petroleum Oils and their Products.

STURTEVANT

The only Crusher and Pulverizer combined for reducing ores, phosphate reck, cement and all hard and refractory material, developing an entirely new principle (rock grinding rock) thus reducing wear on machine to a minimum. Unequaled in capacity and economy. A large number in successful operation. Used and endorsed by the most prominent engineers and users of grinding machinery. Grinds from one



MILL.

to twenty tons per hour, according to fineness. Single machines in daily operation grinding 20 tons per hour magnetic iron ore, 100 barrels per hour cement, and 6 to 8 tons per hour phosphate rock to pass a 60-mesh sieve at a cost far below any known process. Will not wear out. Machines running daily for several years practically as good as new. Wearing parts renewed at slight cost.



Also sole manufacturers of Patent Rock Emery Mill Stones. Superior to the best French Buhr Stones, requiring little dressing, and much more durable, emery being harder and more cutting. One pair Emery Stones at about same cost will outwear two pair Buhrs. The saving in dressing alone will more than pay first cost. Will fit any Buhr Mill Frame. Send for circulars and testimonials, and mention this paper.

COMPANY, STURTEVANT MILL

No. 88 Mason Building, No. 70 Kilby Street,

Boston, Mass., U. S. A.

CARD DRY CONCENTRATOR GATES ROCK AND



Southern Equipment Co., Chattanooga

NUMBER SOLD IN 1891 EXCELS ALL FORMER RECORDS.

We beg to announce the following specialties for 1892:

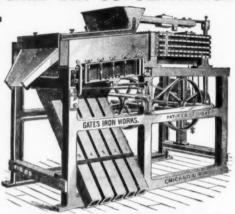
A NEW FINE CRUSHER TO SUPPLANT ROLLS. A NEW DRY ORE CONCENTRATOR-THE CARD, A NEW WET ORE CONCENTRATOR,

Improved Cornish Rolls, Simple and Effective Grinding Pans, Stamp Mills, Driers, All Mining Machinery.

GATES IRON WORKS.

50 H S. Clinton Street, Chicago. New York-136 Liberty St.

Boston-237 Franklin St.



London, England-73 A Queen Victoria St.

For Pulverizing Sugar, as well as Soft Phosphate, Drugs, Roots, &c.

single machine has ever been successful on such t variety of materials, differing so diametrically rature.

J. R. ALSING COMPANY, Sole Agents, U. S. A.

Patentees, Manufacturers and Agents,

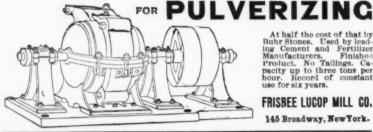
rushing, Grinding and Pulverizing Machinery, 60-62 New Street, New York City.

Telephone Call 3084 Cortland.

Cable Address, Bayaud,

3 MOSSER

Frisbee Lucop Mills



es. Used by lead-nt and Fertilizer rers. Finished No Tailings. Ca-to three tons per cord of constant

FRISBEE LUCOP MILL CO. 145 Broadway, New York.

THE NAROD DRY PULVERIZER.
See large Advt. in last and next issue of this Paper.
American Ore Mechinery Co., No. 1 Broadway, N.Y. City.

CYCLONE PULVERIZER. FOR FINE CRINDING.

Rooms 234 & 235 Washington Bidg..

No. 1 Broadway, New York City.



M. WALTON. oist 🎮 Millwrig

PHILADELPHIA, PA

Special attention given to all kinds of Machinery for handling Coal, Phosphate Rock, Ground Sand and all bulky material; also manufacturer of full line of Paint Machinery. Send for catalogue.

For Catalogue of the BEST PULVERIZING PLANTS

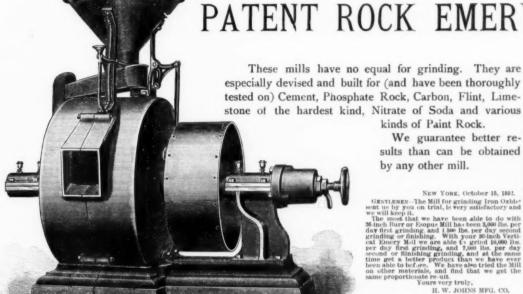
RAYMOND BOOS, IMPACT PULVERIZER CO., - CHICAGO ILL.

ORE WASHERS

GEO. S. COMSTOCK, HAUCK & COMSTOCK MECHANICSBURG, PA.

SPROUT, WALDRON & CO.

Sole Manufacturers of VERTICAL MILLS using the STURTEVANT



PATENT ROCK EMERY MILL STONES.

tested on) Cement, Phosphate Rock, Carbon, Flint, Limestone of the hardest kind, Nitrate of Soda and various kinds of Paint Rock. We guarantee better re-

sults than can be obtained by any other mill.



FOR FULL PARTICULARS ADDRESS

SPROUT, WALDRON & CO., Muncy, Pa.

MANUFACTURERS OF THE WALDRON & SPROUT MILLS AND THE RING MILL MACHINERY.



First-Class Mechanical Construction IN EVERY DETAIL.

Descriptive circulars and full information furnished on application to

FARLOW BUILDING, 92 STATE STREET, BOSTON, MASS.

The PERFECT PULVERIZER

THOROUGHLY TESTED and proved to be the most successful machine ever made for PULVERIZING all refractory substances, such as QUARTZ ORES of all kinds, PHOSPHATE ROCK, CARBON, FOUNDRY FACINGS, PLUMBAGO, PORTLAND AND ROCK CEMENTS, Etc.

> Complete Within Itself. DELIVERS A FINISHED PRODUCT.

> > No Auxillary Apparatus Required.

Automatic Feeder

WITH EACH MILL.

The "LANCASTER" Rock Crushers and Crapples.

The Strongest, Simplest, Cheapest and the Most Powerful of all Breakers and Diggers.



JAMES H. LANCASTER, Patentee and Manufacturer, 141 Broadway, New York. P. O. Box 3139.





THE BROUGHTON DRY MIXER

Por Hard Plaster, Paints, &c. W. D. DUNNING, Syracuse, N. Y.

The Champion Steel Rock Crusher.



Built to stand the racket. Will do the work of hundreds of men with stone hammers. Reduces the expense of rock

crushing so that every public highway can be surfaced with macadam.

The Celebrated Champion Road Roller.

No stiff tongue. The front truck saves the horses' necks. Turns as easy as a wagon, and without disturbing the surface of the macadam.



WRITE FOR CIRCULARS, ADDRESS

THE SOUTHERN EQUIPMENT COMPANY,

CHATTANOOGA, TENN.

AMERICAN ROAD MACHINE COMPANY,

KENNETT SQUARE, PA.

\CHINERY

TIFFIN, OHIO,

ROCK and

(LOWRY'S PATENT.)

(LOWRY'S PATENT.)

The Most Efficient Stone Breaker Ever Made.

Strong and Simple in Construction. Grit Cannot Enter.

Larger Quantity of Rock Broken.

Smaller Crusher Head and Hopper.

Admits Standard-Sized Rock. Bearings Always in Line.

Capacity, 5 tons up to 250 per hour, according to Size of Machine.

Power and Driver on Machine. Making it Self-Contained.

Unbreakable Gyratory Shaft, Has One-Third More Leverage.

Readily Set to Break Different Sizes Required Once Through.

No Returns to Be Pulverized Over and Over Again, as in Others.

Built Open Top, Semi-Open or Rotary Feed for Fine Crushing.

Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 9 the Sizes Built.

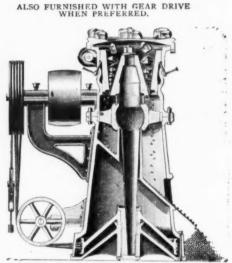
Balanced Gyratory Shaft, Runs in a Closed Oil Cup.

Oilers and Jack Screws for Adjustment on the Outside.

No Dust Rings, Safety Pins or Gear Wheels to Break.

One No. 5 GATES CRUSHER, new and perfect, never having been used. One No. 3 GATES CRUSHER, second hand, but in good order.

Also Specialists in BOLT AND NUT MACHINERY.



Cummer's Drying, Calcining & Pulverizing Union

MACHINERY, APPARATUS and PROCESSES for

DRYING PHOSPHATE

Rock and Pebbles, also separates same from clay and other impurities. Water not necessary. Capacity 10 to 20 tons per hour. Also, dries clay for Brick Making, Pottery, etc. as it comes from bank, for 5 cts. per ton. Also, nearly all kinds of very wet and sticky materials.

CALCINING PHOSPHATE

Rock and Pebbles, at any temperature from 500° F. and higher, very cheaply and rapidly. Also, Gypsum, Rock, etc. Labor dispensed with. Material handled by machinery.

All Dry Ground Mine Dry Paints, Etc.

SEPARATING Ground Phosphate Rock to 80 mesh absolute, and finer. Also, separates ground Portland Cement, Water Lime, and nearly all dry pulverland minerals, at the rate of 10 to 20 tons per hour, with less than one H.P. Also, separates Ground Dry Paints to any fineness wauted.

FINE PULVERIZING

Of Phosphate Rock. For this and for Dry Paint Grinding we make decidedly the best machine. Has large capacity, is durable No journals in machine or exposed to grit. Is a reliable, every-day machine.

PORTLAND CEMENT We will furnish plans for "Dry Process" Portland Cement Works, and all necessary machinery and apparatus for making same, to actual "bona fide" customers.

SEND SAMPLES
Of materials to be dried, calcined, separated or pulverized. Send quart samples of moist materials in sealed cans. If materials are to be pulverized or separated send small samples of crude and finished product. Express prepaid.

Manufactured for U.S. exclusively by

Sold exclusively by

FRONTIER IRON WORKS, Detroit, Mich. THE F. D. CUMMER SONS CO., 388-340 The Arcade, CHIPCLAND, DHIE.

DAVIDS' PATENT DISINTEGRATING MILL.

For Bones, Phosphates, Tankage, Ores, Clay, Fish, Scrap, Salt Cake, &c. FERTILI-ZER MACHINERY, Mixers' Rolls, Breakers, &c., &c. MARINE RAIL-WAYS, CLAY TEMPERERS. Send for Catalogue.

JAMES MURRAY & SON, 102 to 108 York Street. Baltimore, Md.

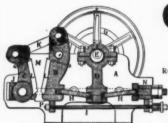
CROWN SMELTING COMPANY,

CHESTER, PA. CROWN BRONZE AND BRASS FOUNDRY.

Heavy Castings, Propeller Wheels and Marine Work SPECIALIV.

MANUFACTURERS OF PHOSPHOR BRONZE.

ROCKAWAY, MORRIS COUNTY, N. J.



CRUSHERS

Crushing Rolls, ROLLERS for Macadam Roads.

A Special Crusher mounted on wheels for TOWNSH'P ROADWORKING, which makes it easily and readily taken from place to place as needed.

SCREENS. Etc. WE MAKE A SPECIALTY OF

CHILLED AND SAND ROLLS

ROLLING MILL MACHINERY, PUMPING and HOISTING MACHINERY for MINING PURPOSES





Rock Drilling and Air Compressing

ACHINERY

TUNNELS, QUARRIES, MINES, RAILROADS,

And wherever Ore and Rock are to be Drilled and Blasted.

RAND DRILL CO., NEW YORK.

Branch Offices—Monadnock Building, Chicago; Ishpeming, Mich.; 1816 18th Street, Denver; Sherbrooke P. O., Canada; Apartado 830, Mexico City.

BUY THE BEST.

BULLOCK'S DIAMOND PROSPECTING CORE DRILLS

FOR SURFACE OR UNDERGROUND PROSPECTING. The Only Drills that will give an Accurate Record of Every Strata Penetrated ALL DRILLS SOLD WITHOUT RESTRICTIONS.



IMPROVED CORLISS ENGINES,

Slide Valve and Straight Line Engines, Eclipse Rock Drills, Air Compressors,

Channeling and Quarrying Machines.

M. C. BULLOCK MFG. CO.

No. 138 Jackson Street,

CHICAGO for what you want.

Cable Address: BULLOCK, CHICAGO.

Denver Branch, 1310 18th Street, R. D. Hobart, Manager.



Prospecting Core Drills

ISPACTORY MADE FOR PROSPECTING

RAPID! ACCURATE! ECONOMICAL!

"N" Drill-Capacity 2,000 feet SPECIALLY ADAPTED TO SOUTHERN COAL AND IRON FORMATIONS.

ALL SIZES OF DRILLS IN STOCK

Operated by Hand or Horse-Power, Steam, Compressed Air or Electricity.

SEND FOR CATALOGUE.

Sullivan Diamond Prospecting Core Drills, Rock Drills and Quarrying Machinery, Mitchell Automatic Coal Tipple, Stanley Entry Driving Machine, General Mining Machinery.

Contractors for Prospecting Mineral Lands with the SULLIVAN DIAMOND CORE DRILL.

SULLIVAN MACHINERY CO.

Successors to DIAMOND PROSPECTING CO.
15 and 17 North Clinton Street,

Eastern Office, 18 Broadway New York. Cable Address, "Diamond, Chicago."

The accompanying cut represents the

CHICAGO, ILL



HILL SLIDING BLIND

ich is the leading Sliding Blind of the day i which we guarantee to give entire satisfac-n. We are also manufacturers of the

And SCREEN DOORS,

which, as the name implies, are "perfection and fine interior finish of all kinds.

We make a specialty of STAIRS, MANTELS, VENEERED DOORS, &c. Estimates made from plans without charge.

Illustrated catalogues, price lists, etc., upon

THE MONROE MFG. GO.,

LIMA OHIO.

THE JOHN F. BYERS MACHINE CO.



WRITE FOR CIRCULARS AND PRICE-LIST.

SUPPLIES.



amp Cars, Flat Cars, Light Locomotives, Hoisting En-gines, Horse-Power Drums, Derrick Fit-

d for Illustrated



62 S. Canal Street, Chicago, Ill.

FURNACE HOISTS. HUUN MINE HOISTS.

(With or Without Boilers.)

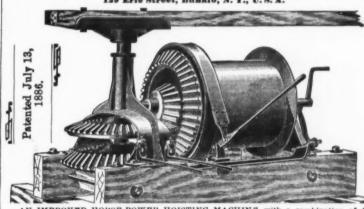
"MINIMO PLANTS," Concentrating Works and Dredging Machinery Furnished Complete.

ROCK BREAKERS AND ROLLS. ORE WASHERS.

COPELAND & BACON 85 Liberty Street, New York.

CONTRACTORS' PLANT MANFG. CO.

129 Eric Street, Buffalo, N. Y., U. S. A.



AN IMPROVED HORSE-POWER HOISTING MACHINE, with a combination of fast and slow speed. With fast speed a borse will lift from 1,000 to 1,200 pounds on a single line at a speed of 60 feet per minute, and with a single block 3,000 pounds 40 feet per minute. With the slow speed a weight of 1% tons with a single line, and with a single block 3 tons; with two single blocks 5 tons; with double and single blocks 7 tons. The speed single line 30 feet per minute, with single block 15 feet per minute, with single block 15 feet per minute. In this combination of gears the uses has the advantage of two machines embraced in one, with a saving of 25 per cent. In cost and 60 per ent. in weight. Simple, does not get our of order. Write for illustrated catalogue of

Horse-Power Hoisting Machinery

FOR BRIDGE BUILDERS, CONTRACTORS, QUARRYMEN, MINERAL AND COAL MINERS, MASONS AND BUILDERS.

DERRICKS AND CONTRACTORS' SUPPLIES.

Mention this paper when you write.

REDUCED COAL BILLS

ENSURED BY THE USE OF THE

PERFECTION SIIding WINDOW SCREENS STANDARD COAL COMPANY'S COMPOUND.

ALL THE UNCONSUMED PRODUCT OF COMBUSTION DONE AWAY WITH.

NOT AN EXPERIMENT. ACTUAL FACT.

STANDARD COAL COMPANY,

Ames Building, Boston, Mass.

Selling Agents, - CROOK, HORNER & CO., - Baltimore, Md.

ECLIPSE CORLISS ENGINES.

Frick Company, Engineers, Builders,



40 to 1,000 H. P. Made.

Condensing, Non-Condensing & Compound. Send for Corliss Circular.

ice-Making and Refrigerating Machinery. Send for Ice-Machine Circular.

Special Automatic Electric Light Engines, Steam Bollers, Traction and Portable Engines, Saw Mills. Send for our General Catalogue.

FOR THE LOWEST PRICED FIRST-CLASS

BOILERS ENGINES AND



GEO. W. TIFFT, SONS & CO.

BUFFALO, N. Y.

500 H. P. Special Stock Sizes 5 to 50 H. BOTH STATIONARY AND SEMI-PORTABLE.

A few good Second-Hand Engines and Boilers are for sale at an a tonishing; y lo / figure. Must be sol i to make room for stock. Correspondence solic ted. Mention this paper.



GREER MACHINERY CO. Kn xville, Tenn. Wholesale Automatic, Co iss and Hoisting

engines

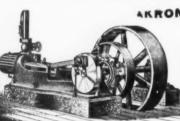
Engines and Boilers, Saw and Grist Mills, Woodworking Ma hinery, &c.



TUBULAR BOILERS on hand for im-

CHANDLER & TAYLOR CO., INDIANAPOLIS, IND.

Webster, Camp & Lane Machine Company,



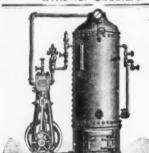
BUILDERS OF

- BOILERS,-

Friction Clutch Pulleys,

Write for Circulars

COMPLETE POWER PLANTS.



WELLS ROGERS, Prest. A. H. GERERT, Secty. E. E. CLINE S. THE CLINE

Manufacturers of Upright and Horizontal, Sta-tionary and Marine Engines and Boilers of all sizes. Hoisting Machinery with Double and Single Engine and Drum. Power Pottery Wheels and Special Machinery built to order.

Works on P. A. & W. near Junction with B. & O. PLYMOUTH, OHIO.



THE RAVENNA BOILER WORKS.

Steam Boilers and Tanks,

Stills and Agitators, Plate and Sheet Iron Work of Every Description.
RAVENNA, OHIO.

STEAM ENGINES AND BOILERS

If you want the very best engine there is made, go direct to the builders, 30 Cortlandt street, New York, and get a NEW YORK SAFETY STEAM POWER CO. VERTICAL ENGINE for 2 to 20 horse power, or a HORIZONTAL AUTOMATIC ENGINE for 20 to 250 horse power. These Engines have the fewest possible wearing parts, all of which are in sight and easily accessible, which is what every intelligent engineer wants. EFENGINES AND BOILERS Erected and Connected ready to run, also Shafting. Pulleys, Belting, Etc



N. Y. SAFETY STEAM POWER CO.

Send for price lim

Also, 64 South Canal St., Chicago.

30 Cortlandt Street, New York.

The BUCKEYE AUTOMATIC CUT-OFF ENGINES

SLOW SPEED. MEDIUM SPEED. AND HIGH-SPEED ENGINES.

Simple, Compound and Triple Expansion Engines, High-Pressure Boilers.

Complete Steam Power Plants of Highest Attainable Efficiency.

A adress BUCKEYE ENGINE CO., Salem, Ohio.

Agents—Rosinson Cary Co., St. Paul, Minn.: N.W. Robinson, of Washington St., Chicago, M. Morse, 511 Commercial Bidg., St. Louis, Mo.; Jas. Cratighton, 635 1st St., Louisville.

ATTANOGOA SAW WORES, Chattanooga, Tenn.: No. 10 Telephone Bidg., 18 Courtland St. N. Y.

RG Foundry Mand Machine

General Office and Works: HARRISBURG, PA

THE HARRISBURG ldeal Tandem Compound Engine.

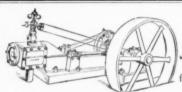
SUPERIOR REGULATION.
PERFECT EQUILIBRIUM IN ACTION.
HIGHEST ECONOMY.

W. R. FLEMING & CO., Mail and Ex. Build'g, N. Y.

Heavy,



PHILADELPHIA AGENCY: 24 S. 7th St., (Build. Ex.) Phila.



Strong and

Slide-Valve Steam Engines,

for heavy and continuous duty are made as a specialty by

Houston, Stanwood & Gamble, P. O. Box 821. CINCINNATI, O.

Generous. Write for "Engineer's Consulting Book" of value to all owners and Steam users.

THE TAYLOR ENGINE CO





IS TO 300 HORSE-POWER.

Jel makers of the TAYLOR AUTOMATIC ENGINES, horizontal and vertical, which are unexcelled lectric Light, Street Railway and general power service. Also builders of the "TIGER" and Plain Slide Valve Engines, portable, vertical and stationary, and BOILERS of all styles.

WOOD AND IRON

ENGINES, BOILERS, Etc.

Supplies Generally.

LEATHER, RUBBER AND COTTON BELTING A Specialty. Write for Prices.

SMITH-COURTNEY CO.

RICAMOND, VA.

336, 338, 340, 342 NORTH ST.

The S. D. WARFIELD CO.

BALTIMORE,

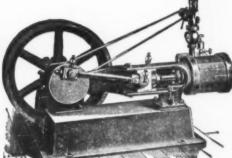
THE WARFIELD MFG. CO.

Complete Steam Plants

DYNAMOS AND

Complete Electric Light

AND RAILROAD PLANTS.



ARFIELD-PILLINGS AUTOMATIC ENGINE.

BRANCH OFFICES:

OUR MACHINERY IS CLASSED AND CATALOGUED AS FOLLOWS:

The Warfield-Pillings Automatic Engine. A high-grade Engine (for high or medium speed) for electric-light and other pureoses

Class D.—Shaft: g. Hangers, Pulleys, Couplings, etc.

Class D.—Shaft: g. Hangers, Pulleys, Couplings, etc.

Class D.—The Warfield-Pillings Patent Water Motor, Ceiling Column and Exhaust Fans, complete Ventilating Machinery—most complete line on the market.

ANY OF THE ABOVE CATALOGUES MAILED UPON APPLICATION.

Globe Machine Works

CENTER CRANK ENGINES

4, 5, 6, 8 and 10 Horse-power.

137-139 W. Second St., Cincinnati, O.

fou must know

E STAND ON TOP

ALBOTT & SONS, RICHMOND, VA.

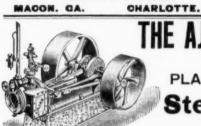
Engines and Boilers.

SAW, CORN AND WHEAT MILLS,

ROPE FEED for SAW MILLS, TIMBER GUAGES, ETEC by 1-16 of an inch. Shafting, Hangers and Pulleys,

Cotton-Seed Oil Mill Machinery MODERN COTTON GINNERIES.

ESTIMATES AND CONTRACTS MADE FOR COMPLETE OUTFITS



Steam Engines,

PLAIN AND AUTOMATIC

CORRY, PENN.

GAS OR GASOLINE FOR FUEL

NO DANGER. NO ENGINEER. NO BOILER.

Run by an Electric Spark from Small Ratter YOU TURN THE SWITCH, ENGINE DOES THE REST

Regan Vapor Engines from one-half to ten horsepower. Regan Vapor Pumping Outfits,
capacity 330 to 10,000 gallons.

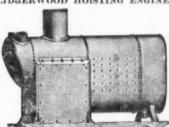
THOMAS KANE & CO.

137 and 139 Wabash Avenue, Chioa,
JAMES & CO., Chattanooga, Tenn., Agents.
Catalogue on pplication.

FOR FIRST-CLASS BOILERS,
Erie and Atlas Engines,
Tanks Stacks. Tubes,
Gins, Mills, Injectors, Shafting,
Pulleys, Belting and Fittings.
COMPLETE MILL, ENGINE AND GIN OUTFITS
At BOILOM Prices.
Don't fail to write us before you buy.
Address FIRST-CLASS BOILERS,

GEO. R. LOMBARD & CO., Augusta, Ga.

LIDGERWOOD HOISTING ENGINES.



Boilers, Engines and Saw Mills, Tobacco Machinery, Improved Greene Engine, Otto Silent Gas Engines

H. P. EDMOND,

Manufacturing

Tudor Boiler Steam Bollet# Lank Juakers

STRICE, 242 E. Pari St. (spp. Pittab'g, Cincinnati & St. Louis Ry.), CINCINNATI, 6.



STATIONARY

Boiler Makers and Sheet-Iron Workers.

REPAIRING PROMPTLY DONE.

MEMPHIS, TENN.

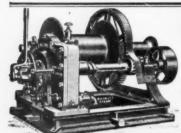




AWARDED THE GRAND PRIZE AT LATE PARIS EXPOSITION.

ENTERPRISE BOILER COMPANY,

Boilers and Tanks, Sheet Iron and Plate Work OF ALL DESCRIPTIONS.



DAKE STEAM FEED Stationary and Hoisting ENCINES.

(NOT A ROTARY.)
Before buying send for "Illustrated Catalogue."

DAKE ENGINE MFG. CO., Grand Haven, Mich.

AGENTS-C. S. Burt & Co., 22 Union St., New Orleans. La. Chas. W. Melcher Machinery Co., 610 N. 4th St., St. Louis, Mo. The Southern Equipment Co., Chattanooga, Tenn.

IGH GRADE AUTOMATIC CUT-OFF ENGINES. SIMPLE, TANDEM AND CROSS No other engine has a perfectly balanced balve. **COMPOUNDS** OUR GUARANTEE. WHO DARE MEET IT? tind of the work, will not reduce the speed of engine one igvolution. Any engine failing to meet this guarantee becomes the property of the purchaser upon payment of one dollar. Send for Catalogue.

Branch Offices (141 Liberty St. New York. N.Y. J. H. M. EWEN MFG. (0. Branch Offices) (141 Liberty St. New York. N.Y. J. H. M. EWEN MFG. (0. Branch Offices) (141 Washington Ave. 51 Louis, Mo. RIDGWAY, PA.

THE AULTMAN & TAYLOR MACHINERY CO

MANSFIELD, OHIO, U. S. A.

COOK PATENT Water Tube Boiler

The Only Perfect Waste-Heat Boiler.

No incrustation. Generates the greatest amount steam with least amount of heat. Repairs reduced to a minimum.

Can be used equally as well for direct firing or with natural gas.

HORIZONTAL, TUBULAR AND FLUE BOILERS, LOCOMOTIVE, FIRE BOX and all Other Styles of BOILERS, OIL TANKS and WATER STAND PIPES

STRUTHERS, WELLS & CO.



Engines = Boilers

Shafting, Pulleys, Hangers, Castings, Etc.

Full Tannery Outfits. WARREN, PA.



BOILERS TRIPLE DRAUGHT The Improved TUBULAR

Holyoke Steam Boiler Works

HOLYOKE. MASS.

Write for Prices. Address

T. H. SEARS, Manager

VALK & MURDOCH IRON WORKS, Charleston, S. C.



ALSO FIRE HYDRANTS, YARD AND WASH HYDRANTS, CHECK AND FOOT VALVES.

Write us for information about our

MORRIS MACHINE & IRON CO, Dover, N.J.

CORLISS · ENGINE.

Built of any required size, from 20 to 2,000 he power and upwards. Horizontal or upright, to suit any location. Non-Condensing, Condensing, >>

Compound, Triple Expansion, or

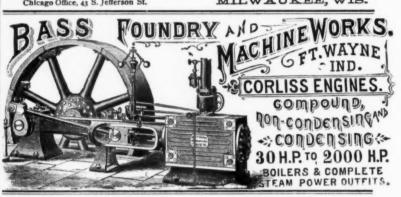
QUADRUPLE EXPANSION. Write for Catalogue and list of users.

The EDWARD P. ALLIS CO.

Reliance Works. MILWAUKEE, WIS.

Automatic Engine Hoisting Engines Air Compressors

Mine Pumps



STEAM BOILERS! STEAM BOILERS!

TANKS, STILLS

highest grade of Steam Boilers of all kinds. Buy where you can get the

THE SOLLEY & FINLEY IRON WORKS, Lima, Ohio



FURNACE GRATE BAR



THAT DOESN'T BLOWER TO SECURE A DRAUGHT.

IT IS THE

KELLY GRATE,

And for DURABILITY, PERFECT FUEL COMBUSTION and SUPERIOR STEAMING QUALI-TIES IT HAS NO EQUAL. IT WILL BURN HARDWOOD, PINE, HEMLOCK or SHINGLE SAWDUST, whether from Circular or Band Saws, with equal success. It will NOT WARP and will OUTWEAR TWO COMMON GRATES. When your plant requires Grates again DON'T be con-tent with one that is "good enough," but use the same number of DOLLARS and secure the BEST— that is THE KELLY GRATE OUTWEAK I WO COMMISSION OF THE STATE OF THE

GIVE US A CHANCE TO BE OF USE TO YOU.

KELLY BROS, Iron Founders, GOSHEN, IND.

GLENFIELD'S BOILER CLEANSING FLUID.

It Preserves Boilers, Lessens the Risk of Exp'osions and Saves Fuel.



A Scale Exterminator and Iron Preserver for marine and land purposes. Removes and prevents incrustation of salt and fresh water. Eliminates all delections matter. Prevents pitting and priming. Scientific tests and practical use commendit.

Used also in Breweries and Distilleries, and acts as a strong disinfectant It has been used for more than thirty years by all the large Atlantic Steamship Lines and great Kailways of England,

KEHRHAHN & CO., 2 S. Holliday St., Baltimore, Md., Sole Agents for U. S.

Stilwell's Patent

Lime Rxtracting HEATER & FILT

The Only Lime Extracting Heater That Will Prevent Scale in Steam Boilers.

Thoroughly Tested.

Over 3,000 of Them in Daily Use.

This cut is a fac-simile of the appearance of the shelves of a No. 5 Heater at work on ordinary lime water, when the door was removed after the Heater had been running two weeks.

STILWELL & BIERCE MFG. CO., DAYTON,



STEARNS MANUFACTURING CO. Office and Works, ERIE, PA. **ELECTRIC LIGHTING, Automatic ENGINES**

FRANCISCO,

AGENCIES: ST. LOUIS-M. P. Johnston Machinery Co., 715 and 717 N. 2d St. MINNEAPOLIS, MINN.—T. M. Maguire, 23 Syndicate Block.



SIMPLE AND COMPOUND



OF NEAT DESIGN AND WORKMANLIKE CONSTRUCTION.

The Feed-Water Passes Through U Shaped Seamless Drawn Brass Tubes. PRICES VERY LOW.

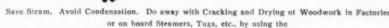
I. B. DAVIS & SON, - Makers, - Hartford, Connecticut.

FOR SIZES, PRICES, ETC , ADDRESS

JAMES BERRYMAN, M. E., Genl. Manager,

No. 125 N. Fourth Street, Philadelphia, Pa.

The Delbert Engineering Co., Limited. New Orleans, la.





MAGNESIA SECTIONAL PIPE AND BOILER COVERINGS. IN USE IN NAVY AND PUBLIC BUILDINGS.

BARR STEAM PUMPING MACHINERY FOR WATER WORKS AND ALL PURPOSES.

STEAM BOILERS, CORLISS ENGINES, HEATERS AND INJECTORS.



SAYE FUEL

WATSON CO., ERIE, PA.
NEW YORK. NASHVILLE. TENN.

ASBESTOS SECTIONAL PIPE COVERINGS.

Non-Conducting Coverings for Steam and Hot Water Pipes, Boilers, etc.

ASBESTOS BOILER COVERINGS.

H. W. JOHNS MANUFACTURING COMPANY,

H. W. Johns' Asbestos Millboard, Sheathings, Building Felts, Fire-Proof Paints, Liquid Paints,
Asbestos Roofing, Etc.

87 MAIDEN LANE, N. Y. JERSEY CITY. CHICAGO, PHILADELPHIA, BOSTON, ATLANTA, LOHBOA
Southern Branch—23 W. Alabama Street, Atlanta Ga.



BALDWIN VACUUM BOILER TUBE CLEANER.

No Steam in the Tube. No Soot In Boiler Room. THE OLIVER P. CLAY CO., Cleveland O.



MACHINE BOLTS, HOT PRESSED BOLTS. WROUGHT WASHERS.

Send specifications and get our prices IT WILL PAY YOU.

MILTON MANUFACTURING CO., Milton, Pa.



Absolutely Absolutely

CORRESPONDENCE SOLICITED.



Fire-Proof.







Endorsed by the Board of Underwriter, Leading Architects, Consulting and Supervising Engineers Recommended by a Board of Examination of the Government of the United States as Superior to Standard Hair Felt. The Best Non-Heat-Conducting Steam Pipe and Steam-Boiler Covering in existence, Approved by the Bureau of Steam Engineering, U. S. N.





SECTIONAL MAGNESIA COVERING



AMBLER, PA

WORTHINGTON STEAM PUMPS

WATER METERS

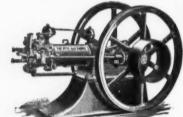
WORTHINGTON, INDEPENDENT CONDENSERS

Philadelphia Boston

NEW YORK. Chicago

St. Louis

Denver.



GAS **Uver 33**,000 in use. **()** ' i

Consumption than
ANY OTHER ENGINE.

Working Without Boiler, Steam, Coal, Ashes or Attendance.

Started Instantly by a Match it gives full power immediately. When Stopped all Expense Ceases.

FOR COAL GAS, GASOLINE, NATURAL GAS, PRODUCER GAS.

No explosions, no fires nor cinders, no gauges, no pumps, no engineer or other attendant while running. Recommended by insurance SURPASSED IN EVERY RESPECT for hoisting in warehouses, printing, ventilating, running small shops, &c. Sizes, ½ to 100 Horse-Power.

Branch Office, 151 Mon- OTTO GAS ENGINE WORKS, Schleicher, Schumm & CO. 330 AND WALNUT STS.

PHILADELPHIA, PA

ES for the Erection of New Cotton Mills will receive far better consideration if it is known that they are to be Equipped with HOPEDALE TWISTERS, WARPERS, and Spoolers, and RAB-BETH 49D SPINDLES.

GEO. DRAPER & SONS, Hopedale, Mass.

Shafting, Hangers and Pulleys | For Mills and Factories of every description.



Flour @ Corn Mill Outfits Complete. | Highest Product Over 1,000 of our Roller Mills in use. Over 8,000 of our Portable Grist Mills in use.

We offer a Complete Mill and Sheller for \$115.00

Adapted to any kind of power. A boy can run and keep it in order.

NORDYKE & MARMON CO.,

85 YORK STREET,

INDIANAPOLIS, IND. Write for pamphlet, "Mills and Milling."



\$845,000.00.

THE EMPLOYERS' LIABILITY ASSURANCE CORPORATION, Limited, OF LONDON, ENGLAND.



Trustees for the United States:

OLIVER W. PEABODY, Esq.,

KIDDER, PEABODY & Co., Boston.
CHAUNCEY M. DEPEW, Esq.,

Pres. N. Y. Cen. and H. R. R. R. Co., New York.

SAMUEL SLOAN, Esq.,

Pres. Del, Lacka and West. R. R. Co., New York.

WM. A. FRENCH, Esq., Pres. Mass. National Bank.

ARRAM FERNCH CO., Boston.

HON. JOHN LOWELL, Boston.

Deposited in United States,

Policies issued giving full protection to Employers against loss by Claims from Employees on account of Accident. Rates Proportioned to Risks of Occupation. One Premium the only Payment during year. No Contingent or other Liability on part of Employer.

Employers with Pay Rolls of \$103,000,000 already covered in United States. No Employer should be without this Protection. Cases Investigated by Competent Inspectors and considered by Eminent Counsel. If liability shown, Claims settled without litigation.

ENDICOTT & MACOMBER, Managers for the United States, AGENTS - Samuel Appleton 28 Central St., Boston; Elmund Dwight, Jr., 51 Cedar St., N. Y.; Middle Department-416-420 Welnut St., Philadelphia, Pa., W. A. L. Laughton, Mana-John M. Ash, Jr., Gen. Agt.; Tattnall Pauldis, Resident Adviser; Maryland Department-Lawford & McKin, General Agents for Maryland and the District of Columbia 22 S. Iday St., Baltimere; Geo. A. Gilbert, 226-228 LaSaile St., Chicago; F. D. Hirshberg & Bro., 120 N. Third St., St. Louis; R. M. Allison State 5 vest for Ala. and Tenn., Birmingham, Ala.

MANUFACTURERS' RECORD.

A WEEKLY SOUTHERN INDUSTRIAL, RAILROAD AND FINANCIAL NEWSPAPER.

Vol. XXII. No. 13 (

BALTIMORE, OCTOBER 28, 1802.

\$1.00 A YEAR. SINGLE COPIES, IC CENTS

Virginia's Building at the World's one by twenty-three feet and about eighteen | The Oyster Industry of Norfolk, Va. Fair.

Fy Pr. Ins S Appears

The Mount Vernon Memorial Association has undertaken the work of raising funds for the reproduction of the Washington as the Virginia building on the World's Fair grounds. The certificates of graved pucture of this historical building certificates are being sold as souvenirs, and the proceeds will go to defray the expenses attending the erection of this building. They hope to sell at least 10,000 of these. Several thousand have already been disposed of, mainly by members of the Virginia Auxiliary Board.

Mount Vernon is situated on the s bank of the Potomac river, in Fairfax county, fifteen miles below Washington city, and occupies a gradually swelling elevation, covered with shade trees both native and foreign, and commands a fine view up and down the river. This old sidence was built in the early part of the eighteenth century by Lawrence Washington, and at his death it fell by inheritance to George, his brother. The place, we are told, was named after Admiral Vernon, under whose command Lawrence Washington served in the West Indies, Who orge Washington came into possession of the property the mansion house stood alone. Wings, now called "dependen-cies," were afterwards added to it by him and the home landed estate much enlarged and otherwise embellished. Most of his life from boyhood was spent here, and everything observable in the arrangement of lawns, shrubbery, gardens, buildings, etc., are suggestive that, notwithstanding that this great man was soldier, statesman and financier, yet he found time to devote some part of his active life to the ornate and beautiful

George Washington bequeathed the property at his death to Bushrod Washington, from whom it passed to John A. Washington, and by him the mansion and 200 acres of land was sold in 1858 to the Ladio Mount Vernon Memorial Association. this time the property was rapidly falling into decay and ruin, but by this association it has been redeemed and is now "kept in a manner exactly suited to its historic

The mansion proper is a wooden struc-ture two main stories in height, with a finished attic and dormer windows. It is built on a substantial brick foundation The chimneys are large and made of brick, triangular in shape, with fireplaces in the corners of the rooms they serve. The weatherboarding or siding is made of beveled boards ten inches in width, one and a-half inches in thickness, tongued and grooved and carefully fitted together. The boards are cut across, with beveled groove, so as to represent a paneled wall. The length of the building is ninety-four feet, and the width thirty-two feet; height of first story ten feet nine inches: sec feet eleven inches; attic six feet nine inches.

in number, vary in size from mere closets to seventeen by seventeen feet and nineteen by sixteen feet, except the banquet hall, which is a large compartment thirtyfeet pitch.

The lower hallway is ample in size, and is elaborately moulded and carved. The carving here in some of the rooms shows: marvel of patient work by the builders of that day and time.

The library, Washington's chamber where he died, Miss Nellie Custis's music room, Mrs. Washington's room and Lafavand the dining-rooms are all notable.

The exterior of the building presents to the river front an open colonnade running its whole length. The columns are slender and square, slightly tapering from floor to eaves of the house, with nearly plain freize surmounted by open-work balustrade be neath the dormer window-sills. The roof s crowned by an octagon-shaped tower

The rear approach or land front of the building is plain, and faces a beautiful lawn, which is flanked on either hand by annexes or "dependencies" and other outbuildings. These "dependencies" were used as kitchens, servants' room, etc.,

By A. Jeffers.

Few people are aware of the extent and importance of the oyster industry. Within a radius of thirty miles of Norfolk it is estimated that from 10,000 to 15,000 hands are directly or indirectly engaged in the oyster work.

There is to our mind great danger that the public oyster beds are on the decline ere everybody, practically, may go and take oysters, there is great danger of ex-hausting the supply. While it may not be possible to annihilate the oyster in the public beds, we have seen that the quality of such oysters is steadily falling off from year to year.

This condition of things has attracted the attention of thinking men, and the result is that more and more oysters have been taken each year from the public beds and transplanted in the thousands upon thousands of acres of private coves and inland waters of this coast

.. I william.

VIRGINIA'S BUILDING AT THE WORLD'S FAIR.

and are united to the main building by gracefully curved colonnades.

At a recent meeting of the board of managers the architect, Capt. Edgerton Rogers, of Richmond, Va., submitted plans and specifications for the reproduction of this building at Chicago in the lot set apart for Virginia by the World's Columbian Exposition authorities, and the onstruction will begin at once.

Much of the interior work will be difficult and costly to reproduce, but just as far as it is possible for this to be done it will

In the large banquet hall it is propo to provide seats, where Virginians can rest and meet their friends. In the library will be gathered books of Virginia authors and paintings. In other rooms will be placed such things as may be collected in the de partments of fine arts, archeology, etc., or those things most fitting and appropriate for their occupancy.

It is reported that specimens of oxide of copper have been found on the Hatcher plantation, lying on the line of the Macon & Dublin Railroad below Macon, Ga.

Between 3,000,000 and 4,000,000 hushels of such oysters are quietly reposing and fattening in the coves within a radius of a few miles of this city. Last week, in a short but very pleasant trip up the Nansemond river, we were informed by a large oyster planter that from the mouth of the Nansemond to a point about twelve miles up the river there was then lying in the bed of the stream fully 250,000 bushels of oysters fattening for market.

On our trip we saw several flocks of wild ducks, a flock of very large and fine wild turkeys and several flocks of quail. All over the water frontage of this section we find old shell mounds, some of them covering acres of land and from two to ten feet some of them cove in thickness. These mounds of shells are evidently the work of the Indians who occupied these waters and these shores prior to the discovery of America. In other words, 400 years ago this present month, when Columbus discovered this continent, the Indians were living here right royally on quait (no toast is mentioned) and other wild fowl of various kinds, including canvas-back duck, and also living on the oyster, which, judging by the shell unds, they had in unlimited quantities.

These waters, filled as they were and as they still are with fish, oysters, clams and crabs, and these hunting grounds, so well stocked with wild game of all kinds, afforded them a royal living, and no wen-der that they looked upon the white man

with suspicion,

To handle this oyster crop requires an expenditure of about \$1,000,000 annually for labor alone; it may possibly reach \$1,250,000. All of this, to the last dollar, is spent in this city, or, rather, is spent in cities on this harbor. The oyster industry is truly an important one for this city. The gross sales of the oyster will not come far short of \$2,500,000 per annum. Add to this the fishing industry and the aggregate will reach beyond \$3,000,000 per year,

In this connection it may be interesting to your readers to understand the great rapidity with which the oyster reproduces itself. It is estimated that a good healthy oyster will produce spawn, or, as it is called locally, "spat," enough for 1,000,000 oysters in one spawning season, and that, too, without half trying. At this rate, in case all the young oysters succeeded in making a live of it, there would not be room enough in the Atlantic ocean for the oysters born in a single season.

In fact, scientific investigation has de veloped the fact that if all ocean growth could go on unchecked for a period somewhat less than thirty days, the waters thereof would be filled to the very surface with animal, vegetable and mineral growth But nature has wisely arranged a system of checks and balances whereby a desirable equilibrium is preserved and only the fittest rvive. Just what proportion of the 1,000,-000 orphan oysters survive is not easily ascertained, but without doubt it is less than one-half of t per cent. The balance of the "spat" is lost to the oyster world, but is doubtless consumed largely by other forms of marine life.

In the economy of nature it is said that but little is really wasted, and this surplus "spat" may be one of the attractions that draws to our shores each year such swarm of fish, that remain and fatten here for our use and benefit. Countless billions of the finny families breed in the warm waters off the Gulf Stream, just off our coast, and come into the Chesapeake and its tributaries, where they fatten and help enrich both our fishermen and the soil. ter industry is a very important one for Norfolk, and one that is rapidly developing. Norfolk, Va., October 13.

Savannah: The Commercial Ocean Gateway Between the South and North and West,

By Col. I. W. Avery

Sayannah has one of the best schemes of trade transportation, not only in the United States, but in the world. Its connected and complete system of Atlantic navigation north, with railway trunks west the Pacific, is unequalled.

That genius of transportation, Wm. M. Wadley, foresaw the great commercial importance of Savannah and conceived and created the great "Central Railroad and ocean steamship system," that is the heart of the carrying network which is working

s commercial destiny Look at the map and mark the four regu-

lar ocean steam lines of passenger and freight service radiating from Savannal Boston, New York, Philadelphia and Baltimore, the four chief American Atlantic ports and greatest Northern commercial ocean marts.

Then note the magnificent and wellequipped schemes of connected iron railway tracks running without a break from Savannah to the Gulf, the West and the North, reaching every interior city, and the great Pacific ocean ports distributing her water cargoes.

You have in the symmetrical combination of these great water and rail plants, through this elevated, healthful and favored Savannah, the natural leader of the South Atlantic seaports of this continent, an instrumentality of commercial growth and power whose results cannot be measured.

The Central Railroad's vital lines leading to Augusta, Atlanta, Columbus, Chat-Montgomery, Birmingham and tanooga, Albany are supplemented by other important railways from Savannah. We have the Savannah & Charleston Railroad, the Atlantic Coast Line to the North, the Sa-yannah & Columbia, the "South Bound," the middle line to the North and short line to the Carolina mountains; the Savannah, Americus & Montgomery, the direct line to the Gulf and the Southwest; the East Tennessee, Virginia & Georgia to Macon and Rome, and the Savannah, Florida & Western, the short line to the orange land and the West Indies, all modern lines in successful operation.

There are building the Macon, Dublin & Savannah by Dublin, the Middle Georgia & Atlantic by Eatonton from Atlanta to Savannah, and the Savannah & Jacksonville by Darien, all short and through new and rich territory to feed Savannah's com merce and afford competition with existing

lines, ensuring low fares and freights.
Within a year under the operation of the se of the South Bound Railroad to the Florida Central system, the Florida Central the Jacksonville, Tampa & Key West will have direct connection through Savanwith the North and West, centering all of the Florida railway systems in Savannah, shortening the distance between Jacksonville and Savannah nearly sixty miles, and giving tourists to Florida the nearest both from Cincinnati and New York.

All of the Savannah railway lines have close, direct and great railway connections—Chattanooga, Nashville & Louis-ville, the Kansas, Memphis & Birmingham, the Richmond & Danville, the Tex Pacific and others-trunk lines from the Atlantic to the Pacific oceans, shorter and of easier grades than the great Northern trunk lines, and free from snow and ice.

The Central Railroad system has about 2,000 miles of track in Georgia, Alabama and South Carolina, with thirteen magnificent steamships to Atlantic ports.

The Savannah, Florida & Western, the 'Plant system," has over 900 miles of track in Georgia, Florida and Alabama, with almost 1,000 miles of steam water lines.

Timber, cotton, coal, iron, naval store rice, phosphates, grain, truck and fruit of our own load these lines, which connect the Atlantic, Gulf and Pacific coasts and the West Indies and South America, using the vast Union, Missouri and Southern Pacific Railroads.

Thus royally equipped with transporta-tion powers, I shall next show Savannah nearer than New York to the great Western marts of trade and the proper route for European commerce to go to the West.

Cot. ALBERT A. POPE, who is an indefatigable worker for the cause of good roads, has sent a circular letter to a number of railroad presidents throughout the country asking them to aid in spreading among the people along their lines information as to the proper construction and maintenance of highways.

The Construction of Stone Roads.

By W. E. Voorhees

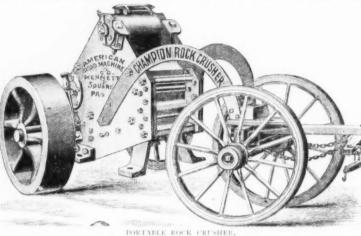
Since the question of road improvement first began to assume a position of importance in this country the demand for stone roads has been constantly increasing. This increased demand is caused by the inferior quality of our common dirt roads and by the prevalent idea that no road but a stone road can be kept in good condition throughout the entire year.

While it is undisputed that stone makes the most permanent road, and is kept in repair more easily and cheaply than any other kind of road, yet it is well to warn all road-makers that the old adage "the more

roads are entirely unnecessary. But there are right principles to be observed in stone road construction as well as in dirt road construction, and these principles must be conformed to if the best results are to be

I have already referred to the Telford and MacAdam systems of stone road construction, because they are the two best

As to the relative merits of these two systems there is some dispute between competent engineers, but it may be stated that both are good systems, but when built according to regular specifications are too expensive for country roads. The greatest difference in these two systems is found in



haste the less speed" is applicable in this the foundation of the road. In the Macpoor foundation it will be apparent to all traffic the Telford system is considered the that it would have been much better had best, while for ordinary country highways, the road been more carefully built in the where traffic is comparatively light and

Poor methods never fail to bring poor results, and it will be well for all road-makers to study the best methods, and to profit by the experience of those who have failed in the past, or by their own past failures in this important work.

In sections where plenty of material is

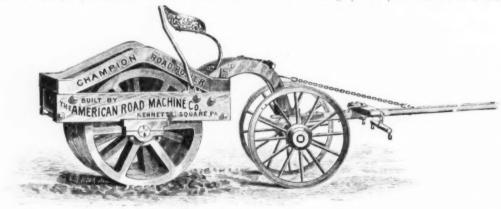
as well as in any other line of work. It is Adam the stone is of the same size through-easy enough to build good looking stone out the entire road-bed, while in the roads that will pass a superficial inspection, but when the stone used in the construction carefully laid, and the finer material is put of such roads has sunk into the mud of its on top. In sections of hard frost and heavy where cheapness is the one great requisite, the MacAdam system, with some modifications, is generally preferred.

John Loudon MacAdam has probably done more than any other one man to enlighten the world on the subject of road improvement, and by his energy and perseverance he succeeded in revolutionizing

should be dry, hard and compact, with a slight convexity of surface, and the drainage should be as near perfect as possible. Following MacAdam's principle, the stone which is then put on the road-bed should be broken small, to pass through a 2-inch ring being the size generally required. The question of how thick this metal should be laid on the road-hed is a matter of some dispute, the regular specifications for MacAdam roads calling for from ten to twelve inches, but this is only where traffic is heavy, and MacAdam contends that the only object is to keep the foundation or native soil dry, the stone covering merely acting as a roof, and that the thickness of the coating should only be regulated by the quantity of material necessary to make an impervious coating, and never by reference to its own weight carrying capacity, MacAdam, in his writings, speaks of sometimes using but four and even three inches of coating, Of course the thicker the coating the longer the road-bed will wear, but for ordinary country road-making six inches of coating will make a very good road. Now, if the best results are to be obtained from such a road, the material must bind firmly together and form one solid mass, with a smooth surface that cannot be affected by weather or displaced by the action of frost. In order to obtain such a result the stone must be thoroughly rolled as it is put on the road-bed. The old method of spreading stone on a road-bed with the idea that would be worn smooth and even by traffic has been exploded, as it has been found to give poor results, causing a great waste of material and a road that is unpleasant to travel on for some time.

It is also necessary to roll the foundation of a stone road if it is to be made as perfect as possible. The foundation must be dry, hard and unyielding, and this condition can only be obtained by thorough rolling. After the foundation has been gone over once with a 4 or 5-ton roller it will be found to be full of depressions. These depressions should be filled in with sand, fine gravel or ashes and the rolling continued until the foundation is entirely smooth and compact.

The binding process is a very im-portant part of the work of stone road-



found, and where the population is large enough to admit of the expense, the work of stone road construction should be pushed as rapidly as possible. A few miles of the main roads can be stoned each year without the expense being greatly felt.

But it will be well for all road-makers contemplating the building of stone roads to bear in mind that it is better to build one mile of permanent stone road than ten miles that will soon become disgusting to

It must not be understood from this that nothing but the most expensive stone roads should be built; on the contrary, I believe that for country roads, where traffic is never much better to have a good foundation and a poor surface than the most costly surface expensive grades of MacAdam and Telford with a poor foundation. The foundation MacAdam was not of the hardest kind and

the work of road-making not only in Great

Britain, but in the whole civilized world, In the work of stone road construction would be well for every road-maker to keep this injuction of MacAdam's constantly in mind:

The broken stone is only to preserve the under road from moisture, and not at all to support the weight of vehicles, the weight of which must really be born by the native soil, which, while preserved dry, will carry any weight, and does in fact carry the stone road itself as well as the

The foundation is therefore the mosimportant part of the road, and it should be prepared with the utmost care; it is that for country roads, where traffic is never much better to have a good foundation and more than ordinarily heavy, the higher or a poor surface than the most costly surface

making, as upon the thorough binding together of the metal d depends Adam's system provided for the stone to be spread evenly on the foundation without any mixture of earth, gravel or other foreign matter, and nothing to be laid on the stone for binding it together. He per-sisted that clean, broken stone would combine by its own angles into a smooth, solid surface. This principle is deviated from to a considerable extent at the time, as many specifications for MacAdam roadways call for at least two inches of screenings to be placed on top of the broken

would bind more readily than the harder varieties of stone used in this country, as it has been demonstrated by actual experience that stone of the hardest variety, such as trap rock, will not bind together readily

with any amount of rolling.

In MacAdam's time all stone was broken hand, but this slow method has been succeeded by machinery, and breaking stone by hand is now almost a lost art. In breaking stone with a rock crusher to a 2-inch size quite an amount of fine dust and small chips is produced. In building the higher grades of Telford and MacAdam roads this fine material is carefully screened and placed on top of the road-bed to be thoroughly rolled, so as to assist in binding the coarser stone of the superstructure together, but in building a road such as I have described it will be found best to leave the fine dust and chips with the coarser stone as it comes from the crusher. The material should then be spread, not dumped, on the road, and the fine dust and chips, being thoroughly mixed with the coarser stone, will aid in binding or cementing the material closely together.

It will be seen that in order to build stone roads cheaply and well every town and township should provide itself with two very necessary implements, viz., a rock crusher and a road roller. In addition to these two implements every town should have a road machine, wheel and drag scrapers and a road plow for preparing the foundation.

I have already given illustrations of all of these machines with the exception of the crusher, and as this is a very necessary implement to have if stone road is to be built cheaply, I give an illustration of a portable rock crusher of approved pattern. the material for road-making is not generally found in one place, and where it is necessary to have a machine that can be easily and quickly moved, a portable crusher should always be secured.

This matter of improved machinery can not be too strongly urged upon the roadmakers of our country, particularly as there is a tendency in some sections to neglect it. Road officers who could not be induced to have anything but the best implements on their farms will endeavor to get along with old-fashioned methods in their road work, fearing the public displeasure should they a large outlay for road machinery, But this is not as it should be; the public is always appreciative of good results, and it has been proven that improved roadmaking implements give very good results. Although the first cost of good machinery may appear large, yet it will be found to be cheaper in the end than the old-fashioned methods, which make the work expensive and give poor results.

Kennett Square, Pa.

Country Roads in Virginia.

At the meeting of the Association of Engineers of Virginia, held at Roanoke, Va., October 21 and 22, the committee which had been appointed at a previous meeting to consider the question of good countay roads submitted an interesting report with some valuable recommendations, treating of some of the difficulties met with in road-building in Virginia the report suggests as a standard for roads sixwidth of driveway and a 4-foot walk and 3-foot ditch or drain on each side. In gravel roads the thickness in the middle ecommended to be twelve inches and on the sides eight inches, with an 8-inch For macadam roads a thickness of six inches in the middle is recommended and four inches on the sides, with an 8-inch crown. In estimating the probable cost earth roads are placed at from \$800 to \$1,500 per mile, gravel roads \$2,000 to \$3,500 and macadam from \$2,500 to \$4,000.

the control of the counties themselves through their chosen representatives, and in the manner cheapest and best adapted to each county. For instance, the ffice of county surveyor could be changed to that of county engineer and filled by skilled engineers who should have charge of the construction and maintenance of all public highways, bridges, etc., within the This change would not materially increase the county expenses, as there could always be found in every county engineers in private practice who would serve the county for a nominal charge for work performed or for a certain annual compensation, and they need not be excluded from private practice when their services are not required on public work.

As the maintenance of roads is equally as important as their construction, work should be exclusively in the hands of men appointed and paid a salary for th purpose, and under the supervision of the county engineer. For the sake of uniformity of construction, and in the interest of the State and counties, it is also suggested that the office of State engineer be created by the legislature. This officer would prepare or approve plans and estimates for highways, bridges, etc., and in general supervise and inspect their construction, keep statistical archives and perform such other duties for the State night be ordained by law. It should be filled by a competent engineer for a term not less than four years, who should be paid such a salary as would induce first-class engineers to give their entire attention to the duties of the offic

Regarding the use of convicts in roadaking, the report states that this subject should be left with the counties, each doing as it deems best. In the matter of obtaining means for the construction and maintenance of highways it is suggested that the legislature be called upon to repeal the personal labor tax law and substitute a per capita tax. As the population of Virginia is 1,655,950 persons, about one-half of whom are engaged in agriculture, there are about 165,000 persons throughout the State taxable for road betterments. The State contains 100 counties, and, dividing th taxable persons equally, each county would have 1,650 persons on whom it would levy If this tax were made \$3 pe annum, the county would receive about \$5,000 per year for highway improvements and a regular system of road improvements could be undertaken and carried on. After the first expense of construction was over the tax could be reduced to cover only the unt needed in maintaining the re

In Southwestern Louisiana: The Town of Washington.

From a Staff Corresp Washington, La., October 20.

writing a series of articles upon the ssibilities of Louisiana and its industrial development, particularly among the smaller cities in the State, I shall begin with Washington. This little city of 1,800 people has interested me deeply, because it enjoys such wonderful natural advantages for the making of a great manufacturing town, and because the citizens, either from an innate sense of modesty or an inclination to retain possession of these superb resources, have kept the outside world in ignorance of the lavish way nature has smiled upon their town. For this reason I have selected Washington, La., as the first of a line of sketches from the "land of Arcadia," with the sole object of placing it before the world, as it deserves.

There are many reasons why Washington ufacturing town, and they will be enumerated in a general way in this letter, and Regarding the supervision of construc-tion and maintenance of highways, it is articles. For years this town was

advised that they should be directly under purely agricultural, ginning the cotton of bining parishes, and was the shipping point for the great sugar plantations along the bayous Teche and Courtableau. But in recent years the town has awakened to the fact that other natural resources existed within its environs, and in it's immediate neighborhood manufactories have been erected to develop them. At this writing there are no less than a round dozen of manufacturing establishments at Washington, including a cotton mill of 3,000 spindles for making twine, rope and lamp wick; a rice mill, cotton gin, saw mill, sash and blind factory, brick mill, drain pipe and tile works, and several cistern factories. So the town has already entered upon an industrial era which will add greatly to the agricultural interests it also enjoys.

Let me say a word about Washington from a point of topography. Situated in a rolling country, the town rests upon a high bluff along the banks of Bayou Courtableau, The land is Louisiana soil-that is sufficient as to its quality. The homes are large, roomy and well constructed, and the lawns are broad and grandly shaded, and the rents are low-an ideal town for small factories where employes could own pretty homes for almost nothing. And for the owners of these factories there are grand sites for homes on a more elaborate with raw material and cheap labor at the very doors.

Now that Washington is really bestirring itself to develop its resources, I can picture an ideal manufacturing town. The Courtableau takes the freight to the great waterway of the Mississippi and thence to the whole world by steamboat, and the Southern Pacific Railway offers inducements by rail. Freights are low, an important iten to manufacturers intending to locate. Factory sites along the bayou cannot be excelled in convenience, for, with a twomile switch already running along the rear and the Bayou Courtableau directly in front, the raw material is taken in at one door and the finished product emerges from the other without even draying in either case. In some cases, hardwoods for instance, the raw material is gathered along the banks of the bayous Cocodrie and Boenf for 100 miles or more and floated down these bayous to where they merge and form the Courtableau. These are in valuable reservoirs for rafting lumber or logs to the future industrial Washington Here can be got the finest timber cheaply, and there is hardly such a market in th world for the output of agricultural implements as Southwestern Louisiana. saving in transportation alone on raw material and product would be 20 per cent., a good dividend on a manufacturing investment.

Besides agricultural implements, Washington possesses unusual facilities for the manufacture of hardwoods. Take a spoke and hub factory, a furniture factory, tory for making axe-handles, etc. One of the merchants of Washington informed me that he paid \$130 freight on a carload of Western furniture, which could be manufactured at Washington from the hard-woods and the whole freight saved. A wagon and carriage factory could make large profits at Washington, and the entire product of such an industry sold to the merchants of the town. There is an enormous consumption of these lines of articles, and the merchants would prefer to purchase at the home market. This I have from the merchants themselves, all of whom are desirous of developing the town. The timber is available, of easy access, and includes such qualities as hickory, oak, black walnut, magnolia, ash, gum, poplar and cypress in inexhaustible quantities, and can be secured at from \$5 to \$10 an acre. To illustrate how money can be made from utilizing these woods, Edward Alcott, of Liverpool, has mills only five miles from treasurer.

Washington where his agents are cutting e hardwoods and shipping them England and Ireland, where they sell for \$120 per 1,000 feet. He can get 20,000 to 30,000 feet from an acre, and it costs him only \$5 per acre for this magnificent wood, Agricultural implements and similar articles are made from these woods abroad, and ought to be made from them here

Apart from the hardwood industries which ought to be established, and will soon be established by some enterprising manufacturer who may appreciate the situation through these articles, there are other lines which would pay, and pay well. A paper mill would be a good business investment; a brick mill could market its product on the sugar plantations; there is room for another oil mill; and a sugar refinery, with the enormous sugar plantations adjoining Washington, would reap rich dividende These are among the industries which ought to locate here, and as for town improvement, already two electric companies are estimating on lighting plants, and an ice factory is in contemplation. I look for decided additions to this little Louisiana city within the next six months, for with its natural advantages known to capital there is bound to be an influx of money and a tide of new enterprises into the town which will place it among the foremost of the industrial cities of the State.

FREDERIC LEWETT COOKE.

Increased Property Values in Georgia.

In a recent preliminary report on the finances of Georgia submitted by Comptroller-General Wright to Governor Northen the increase in the assessed value of property in the State is shown as follows:

																								\$134,959,548
1550		,	,			٠		ı			,		,		,		,			,		i	ý	251,424,651
1881		,			. ,	,	,			,	,					,						,	,	270,993,888
1882	,								,	,		,	,	,					,			,	,	287,249,408
1883				. ,						'n		ı			,						٠	,		306,921,355
1884			٠.	. ,																×				317,074,271
1885	,			. ,		,		,	,							,						,		321,695,616
1886									,		,									,		,		329,489,555
1887						×				,							,							341,504,921
1888			. ,			ı.								,			×		,	,		,		357,167,458
1889					i.												,		ï	,				380,189,314
1890																								415,828,945
1891																		,						444-969-755
1892				. ,		×							,											403,753,534

The value of railroad property, which is xempted by law from advalorem taxation, is not included in the above statement, which is estimated to be worth \$20,000,000,

Georgia's total increase in wealth since 1879, exclusive of railroad property, has been \$196,056,090, and including the railroads it is \$228,793,986.

The property returned by colored taxpayers shows even a greater increase, as

																								\$ 5,182,398
1880	,		,	,	,	,		,	,	,	,	,	,	,	,	,	,		,				,	5,764,293
1881	,								,	,			,				,			,				0,478,951
1882	,													ì			,			×	,	,		6,589,876
1883		į.																		,				7,582,395
1884																					,	,	,	8,021,525
1885					,		,																,	8,153,390
1886			ï		k					,			,					,			,		,	8,655,298
1887							,										,				,			8.039.479
1888																								9,631,271
1889													,		,				×	,				10,415,330
1890									,												,	,	,	12,322,003
1891					i				,												,	í	à	14,196,735
+ March																								14 550, 575

An important movement has been instituted at Chattanooga, Tenn., by the Chamber of Commerce. Several weeks ago that organization appointed a committe three, Messrs, J. B. Spencer, J. M. Goad and William Cooke, to investigate the feasibility of growing tobacco in the Tennessee section, and upon investigation they found that both the climate and soil in Tennessee, North Georgia and North Alabama are well adapted for tobacco cultivation, and that proper care would make this an important industry. As a result of the above conclusions the Tennessee and Georgia Tobacco Association has been organized to encourage the cultivation of tobacco in Tennessee and Georgia. The association proposes to help planters every possible way, furnish seed and information and aid in securing experienced labor. John W. Faxon has been chosen

PHOSPHATES.

Geology of Alabama Phosphates and Maris.

In the early part of 1884 specimens of phosphatic nodules and shell casts were ent by J. W. Spencer, of Hamburg, Perry Ala., to Dr. C. U. Shepard, of Charleston, S. C., who analyzed them, and, upon recognizing them as phosphates, sent his assistant, Dr. Chazal, to the place to investigate the occurrence. After an examination Dr. Chazal came to the conclusion that they were not in sufficient quantity to be commercially important. After this commercially important. samples were sent to the State Geological arvey, and in April of the same year the State geologist examined the ground, and, while satisfied that so far as high-grade phasediates were concerned Dr. Chazal was right, he found in addition to the nodular phosphates a phosphatic greensand which he thought would become an article of great importance to the agricultural interests of the State. His assistant, D. W. Langdon, Jr., was sent to thoroughly investigate its occurrence. Since that time careful investi gations have been made, and with highly

Phosphatic marks have been found in Alabama both in the Cretaceous and Ter-tiary formations. From the margin of the of the older formations the strata of the Cretaceons and Tertiary make up the whole mass of land toward the Gulf of Mexico. The margin of these older rocks stretches in a curve from the northwest corner of the State across near Fayette Court House, Tuscaloosa, Centerville and Wetumpka to Columbus, Ga.

The Cretaceons formation is from 2,600 to 3,500 feet thick, and is made up of sands, clay, and limestones in many alterations. The formation is divided into the "Tuscaloosa," the lowermost, consisting of sands and clays, aggregating about 1,000 feet in thickness; the "Entaw" next, consisting also of sands and clays, but containing grains of green and or glauconite; the "Kotten Limestone" next, consisting of clayey limestones and indurated mark, with admixtures of clay beds and some true At the base and summit of this formation there are transition beds graduating into the Eutaw beds below and the Ripley heds above. It is in these transi-tion heds that the phosphates occur. Next above the Rotten Limestone and upper most in the series comes the "Ripley" beds, consisting of hard, sandy, crystalline lime stones near the base, and calcareous clays and bluish, micaceous sandy marls above.

As stated, the phosphates occur in the transition beds at the base and summit of the "Rotten Limestone." The region formed by these beds is commonly known throughout the State under the names "Black Belt," "Canebrake" and "Black Prairies," in allusion to prominent characteristics. The position of the two areas in which the phosphatic deposit occurs is easily located, one being at the northern burder of the prairie belt and the other at its southern border. The belt north of the prairie has been named the Eutaw, Hamburg, Selma belt, and that to the south the Livingston, Fort Deposit, Union Springs

A section through the first belt, at Hamburg, shows about five feet of greensand strongly impregnated with phosphoric acid, five or six feet of a sandy, calcareous stratum forming the matrix of phosphatic nodules, a hard ledge of calcareous sand containing phosphoric acid, loose beds containing shells, then laminated and blue sands. From the second strata it is estimated that from 200 to 800 tons of phosphatic nodules could be secured per

*Condensed from Balletin No. 2 of the Geolog-ical Survey of Alabama on the Phosphates and Marls of Alabama, by Eugene A. Smith. State

extract them from the rocks except where the latter are weathered. The matrix of the nodules is, however, phosphatic and would make a good fertilizer. The greenand bed shows a considerable variation in the proportion of phosphoric acid contained. In an experiment made to deter-mine whether this could be concentrated, the results were unsatisfactory. lowing analyses serve to show the phosphoric acid in the strata at this point:

	Insol. natter.	Phos- moric acid.	Lime
Surface nodules, selected.		38,00	*****
Mixed nodules	16.77	19-97	
Phosphatized shells		10-50	
Nodules from a pit	22.07	14.02	39.03
Matrix of nodules		4.20	STARTE
Matrix sfeet under surface	33.81	2.26	27.85
Indurated greensand		7.60	
Greensand a feet down	31.55	2-13	9.14
Greens'd in soil, cultivated	41.42	.67	29.62

Westward from Hamburg the beds have been traced by Marion, Newberne, Green boro and Cocke's Mill to Eutaw, and beyond this into Mississippi. To the east from Hamburg the beds have been followed through Mulberry and Prattville and on through Macon and Rassell counties almost to the Georgia line. Near this point, how-ever, they are so covered with sands of the doft as to be of little value

The Livingston, Fort Deposit, Union Springs belt, near the Tombigbee and Alabama rivers, consists of the following well-marked divisions: Yellow sands holding highly phosphatic shell casts in many places, dark micaceous sands and clays containing in many localities greensand, some of which holds 1.5 per cent, phosphoric acid and has been cessfully used as a fertilizer, a bluish argillaceous limestone containing many phosphatic shells and beds of sand containing a very small proportion of phosphoric acid. In Sumter county, at Livingston, these strata are found, and in addition are outcrops of calcareous sandstone highly phosphatic. At Coatopa the same occurs, At Moscow, on the Tombigbee river, the strata outcrops on the bank, showing this

In Marengo county the strata can be followed through Jefferson, Nixon's Store and along the Linden & Prairie Bluff road. South of Dayton there is a tenacious calcareous clay containing numerous phosphatic concretions which, if in sufficient quantity, could be utilized. In Wilcox county the belt can be traced from Prairie Blaff to Snow Hill and thence through Dallas county into Lowndes county, continuing eastward through the northern part of Crenshaw, Pike and Bullock counties, appearing in the latter at Flora. Analyses from this bed show:

	Insol. matter.	Phos- phone acid.	Lime
Fossil casts from Boligee White clayey limestone, 4	2.08	27.76	
M. S. E. Livingston Clayey phosphatic marls.		2,38	
Coatopa	51.25	2.24	126434
Moscow, Samter Co Clayer concretions, Day-		2.52	*****
ton, Marengo Co Caicar's sandstone, Prairi	21.41	17×32	*****
Bluff, Witcox Co Phosp tic limestone, Gee	*******	5.35	*****
Bend, Wilcox Co Phosp'tic greensand, Snow	******	12.49	
Hift, Wilcox Co Siliceous limestone, Erea-	30.53	1+94	*****
mond, Dallas Co Greens'd marl, Richnoson,	39-17	Su(19)	24.31
Dahas Co Sandy cryst limestone, Fa	35.23	1-43	10,00
Deposit, Lowndes Co Sandy cryst, limestone		1,1.55	*****
Sandy cryst. imestone,		6+12	****
Olustee Creek, Pike Co., Clay marl, Flora, Bullock		1.11	
Sandy marl. Eufaula, Bar-	67:35	+81	12.00
bour Co	80.14	+41	*****

The Tertiary formation has been sub-

acre, though it is doubtful if it would pay to Pine Barren section," "Black Bluff," "Naheola and Matthews' Landing," "Nanafalia and Coal Bluff," "Bell's Landing or Tus-' "Nanafalia "Wood's Bluff or Bashi" and cahoma." "Hatchetigbee." The "Black Bluff" group in the eastern part of Wilcox county is noted for fertility of land, and in m places there are irregularly-shaped concretions of phosphate of lime. A sandstone bed which appears along the hillside near Allentown is quite phosphatic. In the Nanafalia" group the important bed is a deposit of small oyster shells in greensand. At intervals these beds are much harder than the rest of the bed, and such hard bands are strongly phosphatic. The "Claiborne" includes in places a bed of shell marl containing a considerable proportion phosphate of lime, Near Ozark, Dale county, this is quite prominent. The "White Limestone" formation contains formation contains both phosphatic marks and nodular masses of phosphate of lime. Where the disinte ited marl forms the surface a very productive soil results, as is the case in Ca Washington and Choctaw counties. Marls from St. Stephen's, in Washington county, and many places in Clarke county show a good proportion of phosphoric acid. The following analyses show the character of the phosphatic rocks of this formation

	Insol. nutter,	Phos- phoric acid.	Lime
Phosphatic nodules, Bon- ner's Lane, Wilcox Co		2".103	
Phosphatic sandstone, Al- lentown, Wilcox Co Indurated marl, Nanatalia,		3-71	
Marengo Co Phosphatic marl, St. Ste-	19-31	6.70	
pnen s, Washington Co Phosphatic nodules, Grove	12.00	1-14	65.32
Hm, Clarke Co	1-55	19-45	

The probable origin of the phosphates in Alabama now most generally accepted is that originally presented by Professor Holmes, of Charleston, which is thus summarized by Dr. C. U. Shepard, Jr.:

Accumulations of decomposed animal detritus and extrict water, which dissolved out the phosphates and transported them into calcareous earth, when they were precipitated and fixed by carbonate of lime. This process continued until the carbonate of lime was transformed into phosphate of lime. This mass, originally soft and loose, hardened gradually, but under the wear and roll of water it was broken up and rounded into the phosphatic pebbles now found.

Besides the phosphatic marls, many calcareous marls not phosphatic are found in the State and can be advantageously used

Florida Soft Phosphate.

KENDRICK, FLA., October 17. Editor Manufacturers' Record:
One of the growing industries of Florida,

and one that will be of great importance to the State and the farming interests of the country generally, is the mining and preparation of the soft phosphate. When finely ground this phosphate shows a sufficient percentage of immediately available material, and practical and chemical exper-iments prove that the greater percentage of it becomes gradually available. Each season it is being more generally used by the Florida growers, and it is rapidly being introduced further north. This industry, though now in its infancy, will, in the near future, be of as great importance as the

Captain Welch, of Welchton, was probably the first man to introduce this phosph a natural fertilizer, and at first sold it in its crade state. Others gradually branched out in the business on a larger scale, and by introducing improved machinery for finely pulverizing and preparing the mate rial, obtained better results. Of late potash and ammonia materials have been added, producing a complete fertilizer of great value. This branch of the phosphate busidivided into the "White Limestone," "Claiborne," "Bahrstone" and "Lightlic." The
Lightlic is subdivided into the "Midway or the hard-rock trade, and other plants are

apt to spring into life. This section, Kendrick, has some very valuable deposits of this nature, as well as land pebble and boulder deposits, and two extensive plants for the preparation of the soft phosphate are now in operation. PHOSPHATE

Sale of the Pharr Phosphate Co.

News of an important phosphate deal in Florida was received in Baltimore on Friday last, and conflicting accounts from Charleston, S. C., and other points gave the matter an uncertain color. sentative of the Manufacturers' Record in order to get at the facts, called upon the resident manager of the Walton-Whann Co, in Baltimore and verified the particular lars of the deal as given below. The real estate and mining plant of the Pharr Phosphate Co. was sold recently to the Walton-Whann Co., of Wilmington, Del., for \$75.-000 in cash. This valuable ir pery is located on the Florida Southern Railroad near Bartow, Fla., and consists of about 700 acres of land and a mining plant of about seventy-five tons capacity. The Pharr pebble phosphate mines are said to be among the best and most conveni-ently located in the State of Florida, and produce a superior quality of pebble. Several cargoes have been mined and shipped, and have found a ready market at the highest range of values

It is the intention of the new owners to commence the work of improvement at once and change the features of the whole plant. They propose erecting another plant of greater capacity near the site of the present buildings, and introduce all the new and improved methods in mining and handling the product. The Waiton-Whann Co, has had long experience in the mining of phosphates and manafacture of fertilizers, and with their ample capital the change of ownership will cause a speedy development and will prove of immer benefit to Bartow and Polk county, Fla.

Lake Hancock Pebole Phosphate Co.

The work on the big plant of the Lake Hancock Pebble Phosphate Co., near Bartow, Fla., is to be pushed forward without delay. Mr. Walter Light, of Kansas City, is superintending the construction of the mammoth dredge and flotilla of barges, and has complete supervision over the extensive land plant of the company. A saw mill has already been built and is now at work cutting out the lumber for buildings, boats, etc., and the machinery for the entire plant will be shipped from Kansas City next week. Mr. Light expects to have both land and water plant complete and ready for business in from sixty to ninety days

Phosphate Matters in Anthony.

ANTHONY, FLA., October 25.

The French Company is making rapid headway in the preparations for starting its machinery and will be ready to begin operations in about two weeks. It will employ from 200 to 300 hands, and will operate on a larger scale than any other company in the Anthony region.

The plant of the Anthony Company, which is doubtless the most complete in Florida, promises excellent work. In a broken run of about four days on the first trial of the machinery it washed and dried nearly 100 tons of rock.

The Stranathan Company will have the erection of its dryer completed in a few days and will be ready to put its machinery in motion again. This company has tried two methods of drying, neither of which proved entirely satisfactory, but it is expected that the new dryer (the Cummer) will do excellent work.

Mr. Jacob Russell, now in charge of the

be ready to start his machinery. The Central Florida plant will be a duplicate, with the exception of the dryers, of that of the Anthony Company.

Knott Bros, are shipping another pile of kiln-dried rock, and the Roberts Company has a new pile nearly ready to burn. The Deacon Company has its first pile nearly ready for burning also. The Plate Rock Company, whose plant had been idle for several months, resumed operations again about three weeks ago, and is doing good work.

The machinery for cutting orange-box siding which the J. W. Roberts Phosphate Co., of Anthony, Fla., is running as part of its phosphate plant is now in full operation, and the company has received large orders for the siding, which is of excellent quality, from dealers in different parts of the State.

The freight on phosphate machinery that came to Anthony during August and September amounted to nearly \$3,000.

Mr. H. S. Kedney received seven carloads of machinery at one time some days ago for his Archer plant. Ten carloads have now been received, and three more are to come. This plant will include some of the best machinery yet brought into the State.

Phosphate Markets.

OFFICE MANUFACTURERS' RECORD, BALTIMORE, October 27.

In local circles the movement during the week in phosphate rock has been light, and prices at the close show no material change, eing about steady under late European advices. There are no charters reported during the week. The offering of tonnage is liberal, and rates for handy-sized vessels are unchanged. The arrivals during the week were the schooner Sarah D. Fell, from Charleston, S. C., with 700 tons of phosphate rock to the Eureka and the schooner Edward H. Hight, from Port Royal, S. C., with 720 tons of rock to Lorenz & Rittler. The closing quotations are as follows: Ashley river \$4.75 and Charleston \$5.00; river rock 58 per cent \$4.50 f. o. b.; Florida rock is steady and unchanged, river pebble being held \$4.00 to \$4.52 for Charlotte Harbor and Tampa 60 per cent. product, and \$3.50 to \$4.00 for 50 to 55 per cent. product; land pebble is quoted \$4.50 to \$5.50 f. o. Tampa 68 to 72 per cent. product; Florida boulder 75 to So per cent, product is unchanged at \$8.50 per ton f. o. b. Fernandina. The following quotations represent the prices current at this date:

Phosphate rock f. o. b. Charleston. \$1,750 5 00
Phosphate rock f. o. b. Charleston. \$1,750 5 00
Peace river . 4 000 4 50
Baltimore . 6 000 6 00
(ground) 8 5000 9 00

FERTILIZERS

The market is quiet with a fair demand and prices about steady at the close. We quote as follows: Dissolved South Carolina phosphate rock \$12.00 to \$13.50 in bags for car lots, ground hone \$30.00 per ton, dissolved bone black 18 per cent. and dissolved bone ash \$20.00 to \$22.00 per ton, and kainit \$11.00 to \$12.00 per ton of 2,000 pounds.

CHARLESTON, S. C., October 26,

There is a little better demand, and the phosphate market is generally of a more active tone, with shipments during the week of a better volume and prices steady. Advices from Europe are by no means discouraging, and prices show a steady tone, with prospects of a better demand. The shipments during the week were of moderate proportions, mostly to Baltimore, Philadelphia and New York as follows: Schooner Adele Ball, 576 tons ground rock for New York; Lida J. Lewis, 800 tons rock for Philadelphia, and H. & J. Blenderman, 760 tons rock for Baltimore. The total shipments from this port from September 1, 1892, to October 21st inst. were 19,666 tons crude rock and 876 tons ground. For the corresponding period in 1891-92 the shipments were 18,632 tons crude rock

and 1,735 ground. Values continue unchanged. Crude rock at \$3.75 to \$4.00 f. o. b., hot air dried \$4.75 to \$5.00 f. o. b., and ground \$7.00 to \$7.50. Freight rates are unchanged. Ashley river to New York \$2.25, Richmond, Va., \$1.90, Baltimore, Md., \$1.80, with the outlook for business rather brighter. The comparative exports of crude phosphate rock and ground from the port of Charleston, S. C., from September 1, 1892, to October 21, 1892, and for the corresponding period in 1891-92, are as follows:

	189.	2-93.	189	1-92.
	Crude.	Ground	Crude.	Ground
Baltimore	7.915		9,300	
Philadelphia	3,061		3,350	
Boston				
Elizabethport				
Wilmingt'n, Del.	550			7.47
Barren Is., N. Y.			510	
New York	1,942	876	750	688
Mantua creek			803	
	2,630		1,775	
Richmond	2,613		586	
Seaford, Del				
Newton ck., N. J.			1,078	
Wilmingt'n, N.C.	******	*******	*******	*******
Welsh Point				
Orient, L. L				
Other ports	780		480	300
Total exports.	19.491	876	18,632	1,735
Foreign ports	175			
Grand totals	10,666	876	18,632	1,735

The market for fertilizers is fairly active with a good demand and values regular and about steady. Shipments during the week were 500 tons per schooner Samuel W. Hall for Fernandina. Values are quoted as follows: Acid phosphate \$12.00 to \$12.50, ash element and kainit \$12.00 to \$12.50, ammoniated fertilizer, 2½ per cent., \$18.00 to \$18.50, 2 per cent. at \$18.00 to \$10.00, and I per cent. \$17.50 to \$18.50.

FERNANDINA, FLA., October 23.

Notwithstanding the political excitement which prevails here at present, matters re lating to the phosphate product are still quite active. The receipts of rock at this port are larger than usual, and the number of vessels awaiting cargoes and to arrive give evidence of quite a busy season during the next three months. Nearly every train arriving brings from twenty to thirty carloads of rock, which is immediately shipped. The shipments which are now being made constitute the rock sold before the decline in values. During the past week there arrived in port four steamships and three sailing vessels which will load rock phosphate as follows: Steamships Flamoro, 2,406 tons, from the French Comp. Rothsay, 2,500 tons, from the Early Bird Kennett, 2,100 tons, from Dunnellon mines; Nile, 2,300 tons, from the same; the bark Glen Huntley, 750 tons, from the Florida Company; brig Onolaska, 700 tons, from the French Company, and the schooner C. C. Dams, 200 tons the Empire State mines. The following additional steamships are due: Norlands. to load with 2,400 tons from the Albion mines; Bidlington, 1,600 tons, from the Pebble Company, and the Resolution, 2,000 tons, from the Eagle and Eureka

Ocala, Fla., October 24.

The phosphate interests in Marion county wing up remarkably well at present and a fair activity throughout the mining section is in progress. The various companies here are all in good shape for a successful season's work, and the prospects are that shipments will be larger than usual. Dr. R. R. Snowden left for Richnond, Va., on the 19th inst. to extend his chemical experiments in treating phosphate without sulphuric acid. He access to the most complete laboratory in the State, and will intrust his great chemical secret to his friend, Dr. Myers, of Richmond, Va., and he is confirmed in his belief that the work will be crowned with ss. It is claimed that the new process of Dr. Snowden will entirely eliminate the use of sulphuric acid in making the phosphate in the rock soluble, which by constant use on the soil becomes finally injurious, and it will do away with the expensive plants necessary by the treatment of phosphate rock with acid. As a substitute the new process will be of great importance, when it is considered that the manufacture of sulphuric acid in this country increased from 40,000 tons in 1805 to 535,000 tons in 1891, and over half of this acid is used in the decomposing of phosphate rock.

DUNNELLON, FLA., October 21.

Phosphate matters in and around this mining district present a more favorable outlook, and in this industry as well as others there is considerable improvement during the current month. Among the phosphate companies that are actively engaged, the Dunnellon perhaps takes the lead. This company is now running its washers day and night to load vessels which are due this month and early November at Fernandina. This action on the part of the Dunnellon of putting on extra force makes things very lively, and the outlook for the future seems more promising. The Marion Phosphate Co. extensive operations are also a strong factor in the progress of this section, and on the completion of their work they will have perhaps the best appointed plant in the The machinery now being put in by F. D. Cummer & Son is nearly completed, and the company expect to commence work As soon as this work is com next week. pleted the Marion Company expect to put in two other plants this fall, and the c pletion of the whole work is looked forward to with more than ordinary interest by phosphate men. The Hartshorne Phos phate Co. has its spur track to the mines completed and will start shipping at once.

Phosphate and Fertilizer Notes,

NEGOTIATIONS which have been pending for some time past were closed last week by telegraph whereby the valuable phosphate works and lands near Bartow, Fla., owned by W. H. Beckwith and others, of Tampa, were transferred to the Walton Whann Fertilizer Co., of Wilmington, Del. The price paid was \$75,000, and the property is one of the richest in the State.

THE British steamship Thornaby cleared on the 18th from Tampa for Memel, Germany, with 2,245 tons of phosphate for the French Company.

THE magnificant plant of the Charlotte Harbor Phosphate Co. near Fort Ogden, Fla., is said to be in perfect condition, and is doing good work under the management of Captain Hazelhurst, the superintendent. This plant is said to be one of the most perfect in all its appliances for mining of any in the State.

THE steamship Preston has been chartered by the Dunnellon Company to take 2,400 tons of phosphate. She sailed from Los Palmas, Canary Islands, some days ago, and is daily expected at Fernandina, Fla.

THE Piedmont Phosphate Co. has just shipped to Fernandina, Fla., 1,000 tons of phosphate rock which shows an analysis, according to Shepard, of 83.14 per cent. phosphate of lime and 0.88 per cent. iron

Five small towns, Woodlawn, Elyton, Smithfield, North Highlands and South Highlands, the suburbs of Birmingham, Ala., have applied for admission into that city. Petitions in favor of annexation have been circulated and signed by the majority of persons residing in the towns named. The matter has come before the judiciary committee of the Board of Aldermen of Birmingham, but no decision has as yet been reached, though it is likely that the annexation will be made.

Error in Analytical Determinations of Silicon in Pig Iron.

By. J. Blodget Britton

The method now more used perhaps than any other by American iron-works chemists for determining silicon in pig iron is that known as Dr. Drown's. Its popularity is owing to the comparative ease and speed with which it can be performed, and the claim for accuracy in results made for it by its author, which claim Blair, in his "Chemcal Analysis of Iron," afterwards endorsed. High accuracy, however, we now learn it unquestionably does not afford—not even a general constancy in results. Carefully and properly tested it will be found to invariably give quantities below the truth running from near 2 to more than 15 per cent. of the total silicon in the metal, loss occurring in the filtered solution disregarded.

The claim for accuracy doubtless came from assuming that by the final treatment with fuming hot concentrated sulphuric acid all the silica first brought into solution is precipitated and rendered insoluble and remains on the paper after filtration, when such is not the case. Many experimental tests of the method as published by its author were carefully made, and to show the loss that actually occurs in practice the results obtained by a number are here cited; they are sufficient to indicate the general run of the work, though not the highest limit of loss that sometimes occurs.

The results got by the method are first given and then those from the waste; the percentage of loss occurring is calculated from the two findings:

	Silicon.									
Samples.	Found.	Recovered.	Per ct. loss							
No. 1	1.283	.093	6.75							
No. 2	2,100	.040	2.14							
No. 3	1.260	+093	6.87							
No. 4	1.516	.076	4.95							
No. 5	3.029	+481	13.70							
No. 6	2.972	.270	8.87							
No. 7	1-376	. 221	13.83							
No. 8	1.306	.210	13.84							

The time, care and labor required for recovering the loss in the filtrate is much more than for the determination as usually made, and when quickness in reaching results is absolutely essential, as is mostly the case in the rushing business of works in full blast, the delay cannot be afforded—recovery of the loss becomes impracticable. The results first obtained may be sufficient and even closer than requisite for the needs of the moment, but they should never be taken as true in umpire work or other analytical work where accuracy is important.

The Ironmasters' Laboratory, Warrenton, Va.

In an article read before the American Institute of Mining Engineers at the October meeting, 1892, E. T. Dumble, State geologist of Texas, gave an interesting account of the occurence of grahamite in This mineral closely resembles asphaltum in appearance, but differs in composition. An ultimate analysis made of specimens found in Webb county gave carbon 78.65, hydrogen 7.50, nitrogen 0.15, oxygen 5.08, sulphur 5.42, ash 2.90 and water 0.30. It was soluble in turpentine, chloroform and carbon bisulphide, partly soluble in ether and benzine and insoluble in alcohol; specific gravity 1.186; the streak was dark brown, but the powder black; fracture cuboidal and glossy. Mr. Dumble states that the specimens in Webb county occurred in a thin seam and detached masses in argillaceous sandstone. In Fayette county it occurs in small quantities in a thin seam of lignite.

A very of copper averaging from fifteen to twenty feet in thickness has been discovered near Bentonville, Va., about twelve miles from Front Royal.

TEXTILES.

complete record of new textile enterprises he South will be found in the Construction

Development of Cotton Manufacture.

Early Inventions.

The manufacture of cotton fibres into a voven fabric had its origin in the East, Very crude implements were employed in different processes, and, with the exception of the loom, none of them were worthy of the name of a machine. The yarn was spun on a distaff, and every contrivance used in those primitive times was wholly devoid of the slightest mechanical ingenuity. The loom was composed of a few pieces of reeds which the weaver could easily carry under his arm. His method of operation consisted in digging a hole in the earth for his legs, then attaching the arrangement for working the threads to a couple of overhanging tree limbs, he was prepared for work. The harnesses were depressed by foot-power, while the action of the clastic branch served to elevate them when the foot was removed.

rude contrivance was employed for beating the varns into position, and with this rude machine the Indians produced those exquisite muslins which have been held as curiosities on account of their beauty and general fin-ness of structure. The excellence of those ancient muslins is to be ascribed entirely to the skillful tact of the spinner and weaver by whose agency they were made. As to the exact date of the first manufacture of cotton cloths, it is matter on which authorities disagree The writer has recently been informed by a government official at Washington, D. C., that certain records state that Emperor Ou-Ti, who ascended the throne of hina in 502, wore a robe of fine cotton.

It appears, however, that the cotton plant was exceedingly rare at that time, and its cultivation was confined principally to private gardens. After the introduction of the cotton tree in 1280, at the time when the conquest of China was effected by the Mogul Tartars, every encouragement given by the government for the manufacture of the raw material into cloth. But it not until the thirteenth century that all the difficulties were surmounted, after which the progress was rapid. The industry began to spread into Europe near the beginning of the fifteenth century. most ancient of mechanisms were yet in use for carding, spinning and weaving the cloth, and it was not until after 1750 that any decided improvements were made for ufacturing cotton goods.

One of the most important steps towards improvement was the invention of a device for automatically earding cotton fibres, in 1760, by James Hargreaves, a weaver of Lancashire.

Hargreaves was a peculiar man and seemingly possessed of but little mechanical ability, yet he constructed a system of rollers to work in such way that cotton was carded in considerable less time than was required by the old hand method, device was immediately followed by one in which a main cylinder was employed, and on the surface of which was firmly secured a serial arrangement of fine iron teeth, so constructed that they came in contact with the cotton and opened and disentangled the filaments. These successful advances in the carding process naturally awakened an interest in the weaving and spinning operations, and men were stimulated to make corresponding efforts in these depart-

James Hargreaves comes to the front again with a new mode of spinning, and thus this peculiar man must be recorded on the pages of history as one of the benefacof the cotton trade.

enough to witness the overturning of a common hand spinning-wheel which con-tinued its motion while it lay on the It immediately occurred to him that a series of spindles might be arranged in a position similar to that exhibited the one belonging to the wheel on the ground. Therefore, he commenced a long line of experiments in order to execute the idea which he had formed under the above circumstances. The result was the invention of what is known as the spinning jenny, and containing eight spindles in-stead of one, as in the old spinning-wheel method. The eight spindles in this new use of a large horizontal wheel, over which the endless banding was arranged to run. This ingenious device was soon followed by the spinning frame.

Hargreaves was struggling with the opposition which was offered to the general introduction of his new spinning jenny, Richard Arkwright was employed in the construction of what eventually proved to be the spinning frame. When this ma-chine first appeared it was technically termed the water frame, but later the name "throstle" has been applied to it The chief feature of this device con in the fact that it performed the whole work of communicating the twist automatically, thus requiring the attendant merely to supply the roving. As this method of spinning has little resemblance to the old-fashioned hand wheel, it is very evident that Arkwright deserves special credit for introducing what must be considered as an entirely new idea in all its

Probably no invention has proved of more value in the advancement of the cotton trade than that of the "mule jeany" which was devised by Samuel Crompton, of Bolton, in 1775. The merits of this machine were unknown to the world for some time after its invention, and it did not come into general use until the expiration The finest quality Arkwright's patents. of yarns were successfully spun on Cromp ton's mule, and Hargreaves's method was almost superseded by it. The number of spindles was increased in each of the various instances where an improvement made until the number reached 100 for each machine.

These were arranged in a carriage at uniform distances apart, and received motion from a large wheel with which they were communicated by belting. This carriage, being movable, was made to recede from the rollers employed for delivering the "roving" or unspun yarn at a speed omewhat faster than the latter was out, therefore a draft was effected. When the carriage reached its fartherest extremity, and after sufficient twist was imparted, the yarn was wound on the bobbins, thus completing the operation.

The increased production of varn which followed the establishment of these new spinning devices on a permanent basis resulted in the invention of improved means for weaving the cloth. About the year 1750 the fly shuttle was invented by Mr. Kaye, of Bury. It was some twentyfour years later, however, before the appearance of mechanisms for weaving cloth

In the year 1784 Dr. Cartwright, a man who had never seen a loom before, com-menced operations which terminated in invention of a remarkable "weaving machine," as he termed it. He employed a corps of able assistants in the work, and when completed its projector was delighted to find that it wove a piece of fabric. It was a singular machine. The warp was placed perpendicular, the reed fell with a was a singular machin eight of at least half a hundredweight, and the springs which threw the shuttle were strong enough to have thrown a Congreve rocket. The united efforts of two heavy loom at a slow rate even for a few nts

Nearly three years were conmaking this loom, after which Mr. Cart-wright proceeded to invent one of greater simplicity and easier in motion, which he succeeded in doing. From this time onward the progress of invention and improven in the cotton industry has been unparalelled by that demonstrated in any other branch of the textile world, and to-day the manufacture of cotton cloth from the raw material is conducted on a scientific and profitable basis.

An Easy Way to Build Cotton Factories.

By D. A. Tompkins.

The cost of a cotton factory for the proluction of yarns, commonly called a ning mill," is usually about \$15 to \$20 per spindle, the variation being due to varying ocal conditions and prices of materials and to the kind of equipment put into the mill in the shape of cotton power, fire protection, etc. The cost of a mill to spin and weave also will vary from \$18 to \$25 per spindle.

The factors that enter into the cost of a are land, bricks, lumber, labor and machinery equipment. Of these the land, bricks, lumber and labor exist in abundance in any Southern community. In saying this it must be understood that bricks are nothing but a combination of clay and labor, while lumber is nothing more than the combination of timber and labor. Therefore, when a factory is built in any Southern community the only mor ctually necessary to be sent out of the community is the money for the machinery. The money paid out for making brick and the money paid out for sawing lumber and the money paid out for labor all stays in the South, and these all cost the South no extra money, but simply a little extra energy. The money to pay for machinery must be raised, and, of course, while the money required for bricks, lumber, etc., stays in the community, money must be used as a medium of exchange.

There has been devised at Charlotte, N C., a plan by which a cotton factory may he built on very easy terms and yet be en-tirely successful. The plan is as follows: Organize a company of say \$80,000 to build a spinning mill of 5,000 spindles, with twisting spindles to correspond. Let all the stock be subscribed, payable fifty cents per week per share. A subscriber for twenty shares, \$2,000, would thus pay \$10 per week. At this rate it would require four years to pay the stock to par. With 800 shares subscribed the mill company would have an income of \$1,600 and upwards per month, or nearly \$20,000 per year. With this latter sum all buildings could be constructed and some surplus still remain to pay ou machinery equipment. Having the buildings constructed and paid for and some surplus in the treasury, the company having an income from stockholders of about \$1,600 per month, a contract could then be made for the power, shafting and about one-half the cotton machinery, starting in operation with say 2,500 spindles within eighteen months from the time of the organization of the company. Having once succeeded in getting 2,500 spindles in operation, the maining equipment is simply a matter of putting in the machinery as the mo mes in from the stockholders, until in a little less than four years the entire capital stock will have been paid in and the entire

mill should be in operation.

At Charlotte, N. C., three mills have been built on the above plans, with some modifications as to details. In the case of In the case of one of them the capital stock has now been paid in full for about two years and the mill has paid regular semi-annual divi-dends of 4 per cent, since completion, James Hargreaves was once fortunate powerful men were required to work this. The stock of the other two is not yet com- It is generally thought that the mill carned

pletely paid in, but both mills are doing well, and the stocks of both are cons good property. In the vicinity of Charlotte quite a number of mill companies been organized, and in some cases the mills have been put in operation and others are in course of construction, the mills already built or being built on this plan promising success without exception.

The plan is explained in detail because it seems feasible and desirable for Southern towns, where land, labor, lumber and bricks are abundant and cheap, and almost anybody could afford to take ten shares, equal to \$1,000, payable in weekly instalments over a period of four years, and any business man or firm could well take twenty to fifty shares, and out of the business that would come out of the construction and by the easy terms almost grow richer by the amount subscribed and never feel the weight of the payments

A spinning mill of 5,000 spindles would employ about sixty hands, with a pay-roll that would amount to about \$260 per week to the labor alone, besides which the money paid for salaries, for supplies and profits would all go into circulation in the town. This money would go into circulation every week in the year, and as fully in the summer as fall, and would have a tendency to make business better all the year round in the cases of towns where farming industry alone supports the mercantile

A mill of 5,000 spindles running on yarns from No. 16 to No. 26 would require about twenty bales of cotton per week, or about three bales per day.

The first action necessary for the construction of a mill on the above plan is to get the stock subscribed and then employ an engineer to make plans and specifications of buildings and machinery in such detail as that the officers of the company may complete the mill by following the plans and specifications

These two things being done, the balance is plain sailing.

The Lanett Cotton Mill.

A new 25,000-spindle cotton mill will be built at West Point, Ga. Through the efforts of Mr. L. Lanier, the well-known banker of that place, a company to be known as the Lanett Cotton Mill has been organized with a capital stock of \$600,000, all of which has been subscribed. The plant will have a main building four stories high, 400x 100 feet in size, equipped with 25,000 spindles and 600 broad looms, requiring a 1,000 horse-power engine for their operation. The latest improved heating and ventilating apparatus will be put in, and, in fact, the entire mill is to be a model one in every respect. About 12,000 bales of cotwill be worked up annually. stock of the concern has been taken mainly by the stockholders of the West Point Manufacturing Co., and the control of its affairs will be practically in the hands of Messrs. W. C. & L. Lanier. The company has purchased 200 acres of land adjacent to West Point and had it surveyed and platted for a suburb of 150 cottages, church and polhouse. Work on the mill buildings will commence at once, and the entire plant is expected to be completed and in operation within a year. L. Lanier has been chosen president of the new concern, and F. B. Sears, treasurer,

Southern Textile Notes.

It is said that stock to the amount of \$175,000 has been subscribed for a 10 000spindle cotton mill at Florence, Ala.

THE Orion Knitting Mills, of Kinston, N. C., have lately obtained an order from Chicago, Ill., for 3,160 dozen hose.

THE stockholders of the Tarboro (N. C.) Cotton Factory met last week and declared a dividend of 8 per cent, for the past year.

nearly 20 per cent. Mr. S. S. Nash was re-elected president of the concern.

THE Albion Manufacturing Co., Mount Helly, N. C., has lately equipped its cotton yarn mill with the Grinnell sprinkling system and made other general

THE Munbo Manufacturing Co., of Munbo, N. C., manufacturers of cotton yarns, plaids and cottonades, will soon put two new cards and one speeder in its mill, C. L. Turner is general manager of this concern, and Samuel Turner, assistant. Its product is known in the market and has a good reputation.

MR. WILLIAM GER has commenced the manufacture of ladies' ribbed underwear at 37 Natchez steeet, New Orleans, La. He expects to increase capacity very soon.

A MR. MELVIN, of Lowell, Mass., has lately been in Augusta, Ga., looking for a site upon which a Northern company in-tends erecting a hosiery mill.

THE erection of a cotton mill at Cherryville, N. C., is being talked of. Peter Bean is mentioned as interested.

THE Stanley Creek (N. C.) Cotton Mills ontemplate considerable additions to their plant in the line of machinery next spring.

Messrs, A. T. Schmid, of Terrell, Texas. and Joseph II. Seftin, formerly of Belfast, Ireland, are building a mill for the manufacture of batting at Terrell. They expect to have their plant in operation in about a week, and will make from 1,200 to 1,500 pounds of batting daily.

A. C. LINEBERGER, treasurer of the Tuckaseege Manufacturing Co., of Mt. Holly, N. C., writes us that his company expects to add largely to the plant next spring. The plant operates at present 5,000 spindles and is running day and night, having large orders ahead. A. Rhyne is president of the company, and Thomas A. Davis is mill superintendent.

MR. J. L. LINEBERGER has taken charge of the Wilson Cotton Mill at Lowell, N C. and will operate it. The plant recently closed down on account of financial trouble. It operates 5,600 spindles on yarns,

Messes, A. P. Rhyne & Co., proprietor of the Mt. Holly (N. C.) Cotton Mill, have lately placed in their plant new engine, new lapper and Denn machine, remodeled cards and overhauled thoroughly the entire mill to make first-class yarns from Nos. 14 to 20/1 and 20/2. The plant's equipment includes 2,000 spindles and 1,000 twisters.

THE Galveston (Texas) Cotton and Woolen Mills will extend their colored department and dye their own yarns in future. Messrs, C. R. Makepeace & Co., of Providence, R. L., are now preparing plans for the dyehouse which the company will erect.

THE Union Cotton Mills, of Maiden, N. C., manufacturers of yarns, has now in operation 6,240 spindles, running day and night, and contemplates the addition of ,000 more in the near future. Mr. D. M. Carpenter is president of the company and superintendent of the mill.

THE Providence Cotton Mills, of Maiden, N. C., are putting 500 additional Whitin spindles in their plant. They have been operating 3,000 spindles day and night for a considerable time past, Messrs, H. F. Carpenter, Sons & Co. are the proprietors of the mill.

THE Patterson (N. C.) Cotton and Woolen Mills have lately put in a burr picker, a twister and a press. This plant operates 2,000 spindles and fifty-eight looms and produces cassimeres, kerseys, flannels, linseys, blankets, fancy wool yarns, jeans warps, etc. S. F. Harper is president and treasurer, and George H. Messick, superintendent.

Messrs, Morgan, Cline & Gaffney's new cotton mill now building at Double Shoal, N. C., is about completed and will be started up immediately. Operations will be commenced with 2,000 spindles on 2 and 5-ply carpet warps. Franklyn cards and spinning machinery with Potter & Atherton pickers will be used.

MESSRS, A. C. & R. B. MILLER, proprietors of the Belmont Cotton Mills at Shelby, N. C., have recently placed in their plant two new twisters and a reel furnished by ollens Bros., of Pawtucket, R. I. mill manufactures cotton yarns only, and is now operating with 4,500 Draper spindles and Franklyn cards. Its product weekly is about 11,000 pounds, and sales are readily

THE Lauraglenn Mill, of Shelby, N. C. manufacturer of warps, yarns and ball twine, has recently placed in new machinery and made other improvements. The machinery consisted of a ball winder, Grinnell automatic sprinklers and a fifteen horse-power boiler for heating purposes. Of this concern Thomas P. Baldwin is president; John E. Hurst, vice-president, and R. B. Miller, secretary and treasurer. Mr. Miller is also mill superintendent,

THE Rowan Knitting Co., of Salisbury, N. C., manufacturer of hosiery, will so put two mules in its plant. The company now operating 526 spindles and thirty knitting machines, and has large orders ahead. Theo, F. Klentz is president; F. J. Murdoch, secretary and treasurer, and T. I. McNeely, superintendent.

THE Stanley Creek (N. C.) Cotton Mills will put in an automatic sprinkler system.

THE Anderson (S. C.) Cotton Mills has had plans for its new mill prepared by C R. Makepeace & Co., the well-known mill engineers of Providence, R. I. The plans call for an equipment of 10,000 spin The fly frames and slashers will be furnished by the Lowell (Mass.) Machine Shop and the remainder of the equipment by the Whitin Machine Works, of Whitins-

THE plant and business of the Dartmouth Spinning Co., at Augusta, Ga., has been placed in the hands of Edward II. Coates, of Philadelphia, Pa., and R. L. Bloomfield, of Athens, Ga., and they are authorized to continue the operation of the mill and contract for all necessary supplies. The creditors are mostly Philadelphia bankers and stockholders of the company, The total indebtedness is \$194,000, \$50,000 of which is secured by bonds. This trouble is ascribed to the failure of Messrs. J. H. Coates & Co., of Philadelphia, which took place last January, said to have been caused by private speculation.

THE Vance Cotton Mills, of Salisbury, N. C., are now putting in 5,000 more spindles, making 10,000 in all. The plant turns out yarns and warps from Nos. 20 to 36, and its product has an excellent reputa-tion in the market. F. J. Murdock is president of this company; J. H. Foust, secretary and treasurer, and R. G. Campbell superintendent.

C. E. HUTCHINSON, secretary of Nims Manufacturing Co., Mount Holly, N. C., manufacturers of cotton yarns, writes us that his company has put in its mill 132 twister spindles and has ordered another railway head. A thirty-five horsepower boiler was also added to the plant recently.

THE Cleveland Cotton Mills, of Cleveland Mills, N. C., have placed in their plant a Foster winder, also started a batting mill with a daily output of 300 pounds.

THE stockholders of the Savannah Construction Co. met last week in Savannah and ratified the action of their board of directors in leasing the South Bound Railroad to the Florida Central & Peninsular Railroad Co. The extension of the Se Bound from Savannah to Harts Road, Fla., is guaranteed by this lease, and steps are already under way for its construction

RAILROAD NEWS.

[A complete record of all new railroad building in the South will be found in the Construction Department, on page 267.]

West Virginia Central in Pocahontas County.

In addition to the details of the plans of the West Virginia Central & Pittsburg Railway Co, for reaching the iron ore fields in Pocahontas county, W. Va., which we gave in our last issue, we learn of further progress in the preliminary surveys. Messrs, F. A. Parsons, A. M. Bradley and Ed Baker, who have been with the engineering corps, returned to Beverly, Randolph county, last week. They report that the engineers have made locations for four tunnels with an aggregate length of 3,000 feet, the longest tunnel being 1,400 feet. All four of these are within a distance of about two miles, and are between the headwaters of the Tygart's Valley river and the headwaters of Clover creek, in Pocahontas county. The route which is being surveyed is the first practicable one which has been found, and it passes through a very heavy and extremely rough country, and a railroad built along it will be very

The Paducah, Tennessee & Alabama,

The Paducah, Tennessee & Alabama Railroad Co., which recently purchased the Tennessee Midland, has closed the gap between Hollow Rock and Lexington Tenn., thus connecting the two roads affording a through line from Memphis to Paducah, Ky., 230 miles. From Lexingon the Midland extends twenty-four miles further east to Perryville, on the Tennessee river, from which point it will likely be built to Nashville. This extension pends on the subscription by Davidson sunty for \$350,000 of the company's capital stock, and as the proposition has the support and advocacy of the leading citiand business interests of the county it will probably be accepted. The ques n will be decided at the Nove The Paducah. election by popular vote. Tennessee & Alabama, now built south from Paducah, Ky., to Lexington, Tenn., has not, however, reached its southern terminus as it is projected, and some preliminaries have been arranged to build down into

A Valuable Railroad Link.

The connection between the Fairmont, Morgantown & Pittsburg road at Morgantown, W. Va., and the main line of the Baltimore & Ohio at Uniontown, Pa., which was mentioned last week as playing an important part in the opening up of the West Virginia ore field, will likely be ea pleted some time early in January. The road is already completed and in use from Uniontown to Smithfield, Pa., and work on the remainder is being pushed with the utmost activity. The first four and a-half miles north of Cheat river is almost com-The first four and a-half pleted so far as the grading is concerned, with the exception of a tunnel 3,000 feet in length at Morris Cross Road, which may be the cause of some delay, although every effort is being made to complete it promptly. Messrs, Lane Bros., who have the contract for six and a half miles north of Morgantown, have the heaviest along the line, and last week doubled up their forces and promised to have the work completed early in November. Work on the bridge over Cheat river is being carried very satisfactorily, the piers being above the water and the masonry work almost out of danger of floods. bridge will be of steel, five spans of 125 feet each. It is estimated now that it of completed in two months with fair weather. The aim of the engineers is to get all the grading done before extreme cold weather sets in, it being possible to rates twenty-eight miles of street railway.

carry the tracklaying forward, no matter how cold it gets. Stone ballast is being broken all along the line, and it is in tended to begin tracklaying from the Morgantown end in about ten days

San Antonio & Aransas Pass,

Although there has been an official auincement that negotiations for the sale of the San Antonio & Aransas Pass Railway to the Southern Pacific had been broken off, the chances for the sale are probably as bright if not brighter now than at anytime while the deal was discussed. In response to a query of the MANUFAC-TURERS' RECORD relative to this subject, one whose official position makes him fully acquainted with the exact status of matter stated: "I cannot now say whether the deal between the Southern Pacific and the San Antonio & Aransas Pass Railway Co, will be consummated, but I think it will be in the near future." The delay may have been caused by the litigation in which the Aransas Pass is involved, particulars of which were given in a recent issue of the Manufacturers' Record, or to a failure to agree as to the terms, etc. The impression is that if the deal goes through the Southern Pacific will at take steps towards making Aransas Pass a great shipping harbor for its freight, and it has been claimed that Mr. Huntington will put the Morgan Line of steamers back to Rockport, and all the steamer freight bound from San Antonio to New York will be loaded there instead of New Orleans. projected extensions of the Aransas Pass road, it is thought, would be carried out, including the important branch from Kerrville to Llano, giving a tidewater outlet to the latter, and as well a direct route to the Eagle Pass coal fields.

Railroad Notes.

WILLIAM T. MANNING has been pointed acting chief engineer of the Baltiore & Ohio, vice H. T. Douglas, resigned.

JUDGE MILLER, of Macon, has issued an order for the sale of the Macon & Atlantic Railroad for the benefit of its creditors on November 30, and appointed W. M. Gor-don, C. C. Kilbbee and R. A. Mishet com-

A SAN ANTONIO dispatch states that damage suits amounting to \$100,000 have been instituted against the Southern Pacific Railroad Co. growing out of personal in-juries received by the plantiffs in the Sabine bridge accident on August q.

JUDGE NEWMAN, in the United States ourt at Atlanta, Ga., on October 22 issued an order that if the obligations of the Chattanooga Southern are not paid off within thirty days from that date, J. W. Burke, receiver and special commissioner for the railroad, shall appoint a day on which the property will be sold,

THE control of the Atlanta & Florida Railroad is to remain with the State court, and the sale of the property by order of the United States Court, which an Atlanta dispatch announced last week, is a remote contingency. T. W. Garrett will continue in charge as receiver.

THE La Porte, Houston & Northern Railroad Co, has elected the following officers: President, A. M. York; vice president, I. R. Holmes; general manager, T. W. Lee, and chief engineer, G. G. Woodbridge. The company is actively pushing the construction of its 22-mile ailroad between La Porte and Houston, Texas

DALLAS (Texas) dispatch states that S. P. Cochran has been appointed receiver for the Dallas Consolidated Traction Railway Co. on the application of the Fidelity Insurance, Trust & Safe Deposit Co., Philadelphia, Pa., trustee for bonds to the amount of \$2,250,000. The company ope-

Manufacturers' Record.

Manufacturers' Record Publishing Co. MANUFACTURERS' RECORD BUILDI Lexington and North Streets. BALTIMORE

EDWARD H. SANBORN, Managing Editor, THOMAS P. GRASTY, Special Southern Correspondent.

WESTERN OFFICE-535 and 537 The Rookery CLARENCE P. DAV, Manager.

NEW YORK OFFICE - 126 Liberty Street F. W. ROLLINS, Manager.

NEW ENGLAND OFFICE - 952 Exchang Building, Boston.
S. I. CARPENTER, Manager.

FOREIGN AGENT-REUTER'S TELEGRAM CO. LIMITED, London

Reuter's Telegram Co., Limited, of London are the authorized foreign agents for the MANU FACTURERS' RECORD. Foreign advertisers are referred to the various Reuter offices in England on the Continent, in the Colonies and other parts of the world for rates of advertising. Contracts ould be placed and payments therefor should de through Reuter's Telegram Co., Limited.

ON COUNTRIES.

The first issue in each month will be mailed for ne Dollar per year to subscribers in the Un ates, or Eight Shillings to foreign countrie

BALTIMORE, OCTOBER 28, 1892.

Notice to Advertisers.

The last forms containing advertisement are closed on Tuesday afternoon. Neve advertisements or changes should be received not later than Tuesday noon to ensure attention in the issue bearing date of the following Friday. Reading matter should be in ou office on Wednesday, although late news can be received early Thursday morning.

WE note that the Southern Road Congress, which it was announced in our columns would meet on November 14 in Memphis, Tenn., will be convened on Wednesday, the 16th of that month,

DURING 1891 about 1,200 acres of land in South Carolina were planted in tobacco and nearly 960,000 pounds of tobacco raised. This year it is estimated that 4,413 acres have been planted, and that the yield will be over 3,500,000 pounds.

As interesting statement as to the cost of cotton growing is made by Z. F. Foster, of Greenville, S. C., who planted six acres in the staple this year. He reckons fifty loads of stable manure. with hauling, cost \$41.50, five sacks of guano \$11.25, hoeing \$15.00, plowing \$5.00, preparing ground \$8.00, picking \$40.95 and seed \$1.00, making a total of \$122.70, or \$20.45 per acre. From this ground nine bales of cotton have been secured, averaging \$31.00 each, or \$306. and in addition \$45.00 for seed, a total of \$351, or \$58.50 per acre, leaving a net profit of \$228.30, or \$38.05 per acre. this rate cotton-growing should be profitable, but, unfortunately, three-cent cotton is oftener read about than seen.

Corron circles are much stirred up over the action of the St. Louis, Galveston and Charleston cotton exchanges in requesting the New Orleans and New York exchanges to put the low middling clause in their contracts, and the refusal of the latter two exchanges to do so. The movers of this change claim that

the present form of contract enables speculators to collect large quantities of low-grade stuff and tender it in place of higher grades, compelling holders of long contracts either to accept and resell it at low prices or to make a forced sale of their contracts to avoid receiving it, thus depressing and disturbing the market. They further claim that in Liverpool, where the low middling clause exists, such action is not possible, and consequently spinners take contracts ahead, giving the market a more steady tone. The other side claims that Liverpool is purely a buyers' market, and hence the low middling clause is important in preventing the tender of low-grade stuff which would be useless to spinners, while the American market is a selling one, and when stocks of higher grades are not available it is an advantage to be able to offer and dispose of lower grade stuff.

Errors in Silicon Determinations.

The article which appears in another column on the error in Drown's method of determining silicon in pig iron will be read with interest by chemists, but it is doubtful if all will agree that this method, when properly manipulated, will allow of as great a loss of silicon as is given. The great advantage in this method is the rapidity with which the work can be done, and, coupled with this, as accurate results as can be obtained by any method now in use which does not separately determine silicon and the silica in slag mechanically held in iron.

The loss of silicon in the filtrate in sample No. 5, amounting to nearly half of one per cent. in the iron, increases the total silicon from 3.029 to 3.510 per cent., a difference of some moment to foundries estimating the composition of their castings from the mixture. It is possible that such a loss may come from too great an amount of sulphuric acid and not sufficient heat to drive it off before taking the ferric sulphate into solution prior to filtration. In a number of experiments made in the laboratory of Mayville furnace, Wisconsin, some years ago, it was noted that unless the ferric sulphate was evaporated practically to dryness-that is, so that no free sulphuric acid was seen-and fumes of sulphuric anhydride were driven off, a certain amount of soluble silica always remained and would pass into the filtrate. The matter is worth further experiment to determine more fully the conditions under which soluble silica the people of Texas studiously set themwill be present.

Mechanical Cotton-Picking.

To perfect a machine which will pick otton from the stalk in the field has been the desire of niany inventors, and numerous appliances have been constructed on as many different principles, but thus far none have proven sufficiently satisfactory to be put into practical use. Unfortunately, all the cotton on a stalk does not ripen at one time. There may be twenty bolls in various stages of ripening and only two or three fully ripe, and these may be at the top. bottom or any of the four sides of the plant. A machine, therefore, to pick this cotton without injuring either the plant or the remaining bolls must be

pluck the cotton from the boll and carry it to a receiving chamber or bag in which it is stored. Those who have never seen a cotton plant will better appreciate the difficulty by knowing that there would be the same troubles, and more, to overcome that there would be in inventing a machine to pick blackberries, ripe ones only.

Some of the machines which have been tried have a series of brushes which are pressed against the cotton bolls by the operator, these brushes drawing out the cotton and delivering it to a belt, which in turn carries it to a receptacle in the machine. Another form has a hose through which a strong current of air is drawn. This also is placed against the cotton and draws it from the boll up into a bag. Still another form has a number of arms with little steel fingers which catch the cotton and deliver it into the machine. All have had the same objection, however, either injuring the plant or requiring more time and skill to operate than is necessary for hand-picking. A good field hand can pick from 150 to 200 pounds of seed cotton per day when the stand is goodthat is, where a large number of bolls are open-and even an ordinary hand can get from 100 to 125 pounds. While it is impossible to foretell to what perfection mechanical skill can bring a machine, it does not seem likely that the many conditions necessary to successful mechanical cotton-picking can soon be realized, though the inventor who could do it would become as famous as Whitney, the originator of the cotton gin.

Misrule in Texas.

Texas is a State of enormous resources and of possibilities as magnificent as its territorial greatness. Nature has provided beneath and above the ground every essential required for vast agricultural, industrial and commercial development. A nation in itself, Texas could grow and thrive if isolated from the rest of the world. The natural resources of the State man cannot destroy or remove-he can only prevent their proper utilization. It is the singular misfortune of Texas to be suffering from a dangerous malady-a blight that dwarfs and cripples the growth of the State. This disease which curses the State of Texas is the spirit of the dema gogue which has manifested itself in the iniquitous Alien Land Law and the presumptuous Railroad Commission, the latter now so happily dethroned. Had selves to devise means by which the confidence of the outside world could be destroyed and the wheels of progress within the State stopped and blocked, they could not have accomplished these ends in a more effectual manner than it been done by those prejudice blinded agitators and legislators, of whose principles and purposes Governor Hogg is the embodiment. By their unreasoning enmity to capital and their furious hostility to corporations they have wrought mischief that years of hard work cannot undo or efface

Are we exaggerating the situation? exists? We believe not, and a Texas paper just at hand furnishes us abundant able to reach to any part of the plant, dustrial suburbs of Galveston a large immediate begining,

factory for the manufacture of lace fabries of various kinds. A representative of this company, Mr. R. Behrens, of Galveston, has recently returned from England, whither he went to purchase machinery for the new factory. His experience is well-nigh incredible to those who are not familiar with the results of the Hogg party's work in Texas. His story is substantially as follows:

I went from this city to Nottingham, England went from this city to Nottingham. England, the purpose of purchasing lace-making mainery for our factory at Nottingham, down the and. I went through all the lace factories and rough all the machine shops, and finally decided on what I wanted to ship to Galveston. So I do a bargain with the machine makers.

I purchased the necessary plant at a stipulated price on the following terms: One-half three months after the machinery should be set up in factory and running satisfactorily, and the der at the expiration of six month

remainder at the expiration of six months.

So I wrote out a ten-page contract, and we met
the next day to close the bargain. The legal advisor of these machine makers was on hand and
looked the contract over very carefully. Then
he said: "I shall advise my clients to have nothing to do in this matter for the simple reason that the plant is located in Texas. If it was in any other State in America I should advise them to

Of course I was thunderstruck, and asked for itles and frighten away capital that makes me doubt and advise against this investment. o long as the present spirit of Texans is ag side capital, just so long st." And so I did not cl id I have Govern or Hogg to thank for

Showing how far and wide the distrust of Texas has spread, let us refer to a letter written by Mr. S. M. Swenson, a native of Sweden, to several gentlemen in Texas. Mr. Swenson wrote this letter two weeks ago from New York, having just returned from Sweden. Among other things touching upon the same subject he writes

I do not hesitate to say that the legislation and policy of the State for a few years past has been unwise and unjust, consequently detrimental to the prosperity and welfare of the State. It has created a distrust of public honesty in the people of Texas to such an extent that not only are capthe prosperity and welfare of the State. It has created a distrust of public honesty in the people of Texas to such an extent that not only are cap-italists in other States of the Union deterred from furnishing capital to needed improvements which are or may be controlled by mimical legislation in Texas, but I found on my visit to Sweden this summer that immigrants who had intended to such homes in Texas were deterred from so seek homes in Texas were deterred from so doing by an idea that they would not be permitted to own and hold lands in Texas, and I was frequently called upon to give advice the best locality for settling in other State However untrue the statement about not bein the to legally hold lands for settlement in Te early is, yet it has its origin in a mistaken pol of kindred laws.

These are but two out of many striking illustrations which we could multiply from our own experience and observation, but the subject is too lamentable to invite further amplification of details. The situation in Texas is serious; yes, critical. Perhaps our standpoint, from which we can see the situation free from conflicting influences, gives us a clearer and more impressive view than is possible to those nearer to or within the troubled State. To us it seems that the duty now resting upon the people of Texas, the men of means and intelligence, is to lay aside every consideration of party and unite in a tremendous effort to overthrow the demagogues and set reason upon her feet. This is the only Are we imagining greater wrongs than means through which confidence in Texas can be restored. Confidence once abused is hard to win again, and support for our views. There is now in the magnitude of the work confronting course of erection in one of the new in- the people of Texas makes urgent an

CORRESPONDENCE

The Foundations of Prosperity.

KNOXVILLE, October 1. Editor Manufacturers' Record

Many persons, and especially those who drifted this way during the recent boom in towns, and particularly those who held to the wild-cat lots with a tenacity justified only by the confidence they had officers, are prone to condemn this Southern country without a hearing, and many who contemplated placing money in the iron and coal fields of the South have abandoned the idea with the assertion that Southern investments are not safe. This the country, but a lack of it, and the influence, perhaps, of those friends who gamnd lost. But had they a more intelligent idea of the natural resources of this section they would to-day, and will in the near future, become holders of property that must return large profits on the in-

Birmingham, Ala., was the first Southern town to boom, and basing as she did upon the coal and iron interests, she no sooner began the sale of lots than did the development of her resources follow. Furnaces, coke ovens and various other manufacturing interests sprang up and to a great extent held up the fabulous prices of lots within her borders. She has prospered, and to-day is a thrifty city. Not without her trials, though, and as the birthplace of the bacilli of speculation languished, and those filled with the spirit left their native hills and spread the contagior over the entire mineral section of the South, they were joined by shrewd speculators from all portions of the United States and they located towns. An old farm at ten to fifty dollars an acre was quickly surveyed, platted, advertised and sold at auction, in some instances as high as \$50,000 an acre. Reasonable men should have known better, but they figured that the next day some bigger fool than they would come. But it was not always the case; the inevitable end did come however: it could not be otherwise, as time had been anticipated at least a dozen Samples of coal, ores and timber were exhibited, pictures of blast furnaces, big hotels, plans for the general offices of the company, etc. Streets were filled with engineers, laborers, teams, scrapers, wagons and big plows, while, perchance, some neighboring wood was filled with axemen cutting streets through the forest. The reports from the blasts as they blew out the stumps, the band playing with a chorus of hammers, all tended to stimulate buyers, and the largest crops that old farm ever yielded were gathered that day. My reader may say, or ever will be gathered. Keader, wrong; the greatest prosperity any country has ever known awaits us, and that within the near future, as the day is not far distant when those old bat dens will be reclaimed and this condemned section redeem her promises. Those samples of ores, coals, timber, etc., were truly ours, and are true representatives of large bodies that are being developed by men who seek prosperity at the doors of nature's storehouse, nd not at the expense of their fellow-men.

I know to-day that in point of mineral

wealth no accessible portion of the United States can surpass this in point of quality and perhaps quantity of its ores. And no section of the country is so little developed, and for the lack of it this is the newest county over which the most beautiful flag of all nations floats.

Put your finger on Knoxville, resting on beds of marble of quality, variety and beauty unsurpassed. Five to twenty miles south of her, lying within the shadow of the great Smoky mountains, is an almost veloped body of hematite. Further on towards the south are magnetic and chrome

quality, corundum from the ordinary gray to rubies and sapphires of purest ray serene mica and gold in paying quantities, granite of good quality underlying her virgin forests of fine woods of many varieties. The scenery is unsurpassed in this glorious country of ours. There are splendid waterpowers tearing through the mountain gorges, wasting their herculean strength, and of no use save as a home for innumerable trout, jumping to catch some blossor dropped from an overhanging bough of laurel or rhododendron.

To the southwest are slates as good as found in the world in unlimited quantity. To the west are more marble and lime one, and in the smaller hills are hematite and manganese. Northwest, within fifty miles, are coal, red fossil ores, brown and pink sandstone in abundance and of rare beauty. There is onyx on the banks of the Clivch while the muscles of the river furnish pearls fit for royal diadems. Zinc, d brick clay are all in quantities that will justify the erection of manufactories of almost any description. Northeast and north are lead, zinc, iron, gold, silver and cobalt, the latter so far not sufficiently de veloped to pay.

What more can we ask but time and capital to begin the manufacturing of articles from the crude materials, and what country can justly boast of greater variety alm within the sound of the factory whistle? This is geography based not on somancient legend, but on a personal knowledge of this section, and while I take Knoxville as the centre, I might locate it on a line 100 miles north or south and be justified in the same assertions. Based on indeveloped wealth such as this, there is little doubt that those new towns throughout this section which have been properly located by men of integrity and honest purpose must prosper as is their due; but many ' that knows no waking," and the stain upon the records of some of our nation's prominent men who allowed their names to be used as decoys will remain long after the cry of the wildcat is heard no more in the land. Development may be slow, but with the vast cold fields of Southwest Virginia, with thirty feet of fine coking, gas and domestic coal at ten to fifty dollars per acre, which will soon be opened by the Charleston, Cincinnati & Chicago Railroad, it is only a short haul to the iron beds of East Tennessee and Western North Carolina, and with the now successful operation of the furnaces at Big Stone Cap, Va., and Embreville, Tenn., as a practical assurance of the value of the ores of this immediate section, we extend the hand of fellowship to those seeking legitimate investments on a legitimate basis. And while we do not array this section as a formidable competitor against the iron fields of Lake Superior or the coal interests of Pennsylvania, yet, with our coal and iron in close proxin we must succeed in the manufacture of iron and steel. And while undeveloped lands can be bought as low as two and a-half dollars per acre against thousands in those sections, we must regard Southern investments as safe.

Oil and Natural Gas in Arkansas.

LITTLE ROCK, ARK., October 13. or Manufacturers' Record

About twenty years ago the writer, in company with two other gentlemen (all of us from Ohio), made a horseback survey of the State of Arkansas, and was then strongly impressed with the many natural advantages offering rich returns to invested Among the many other natural products of the State found by us at that time none, to my mind, presented a more promising or remunerative industry than that of operating the petroleum fields of the Upon coming into the State from the Indian Territory, about twenty-five A recent canvass of the city by Mr. miles south of Fort Smith, and traveling Sholes, publisher of the directory, shows

iron ore, kaolin and tale of the finest eastwardly, we came into the Petit Jean In this valley we found oil in many places upon the water in springs and ravines in such quantities as to make it readily gathered, and burned with the peculiar odor of petroleum, but presenting a purer and clearer light, with less smoke than usually comes from crude petroleum as found in Pennsylvania, the cause of which I could only ascribe to elements in either sand or water through which the oil filtered in forcing its way to the surface. This oil, as well as natural gas, was found at many points along the valley of the Petit Jean before reaching the Arkansas river. again found oil of similar appearance about oo miles east of the Arkansas river, or a little north of east, which we concluded then, as I believe now, was a continuation of the same belt or trough.

Upon a trip through much of the same territory in September 1 found a company engaged in boring for oil and gas near the little town of Magazine, Logan county, Ark., where they had found not only oil, but natural gas in such quantities satisfy any expert observer that in this en-terprise the State of Arkansas, and especially the cities of Little Rock and Fort Smith, have much to gain. These cities, or either of them, with the other natural resources, such as iron, manganese, etc., could and will, by having the oil and gas piped to their doors, become the forem manufacturing cities of the Southwest.

Not being acquainted with any of the members of the company operating, and the superintendent being absent at the time of my visit, I could learn nothing of their plans or purposes, but from what I gathered from the citizens of Magazine and from my personal observation of the work, I can, as an experienced oil operator, pror velopments in the very near future.

A Bright Outlook in Roanoke.

ROANOKE, VA., October 20. Editor Manufacturers' Record:

Great improvement is reported in the lumber market in the last sixty days. Sep-tember has been the best month of the year, though the outlook is that October will be just as good, if not better. The demand is strong and steady and prices very good.

There is an increased activity in the iron trade here. The furnaces in and arout Roanoke are all running with large forces. The rolling mill of the Roanoke Iron 6 which was shut down on account of a strike last spring, resumed operations about a week since. They are now running twelve out of fifteen furnaces single turn, and expect to put all of their furnaces in operaearly date.

Mr. W. A. Geary, of Reading, Pa., has recently removed to this city and will commence the manufacture of brooms within the next ten days. He will begin on a small scale at first, but contemplates enlarging his plant as rapidly as the business will justify.

A knitting mill is contemplated by Northern parties interested here. Mr. E. J. Bond has charge of the matter.

A charter has recently been granted to the Board of Trade. Although just organized in June, its present membership is about 190, being next to the largest be in the State.

There is increased activity in building. The city authorities report about 300 buildings under construction. About thirty of these are fine buildings in the business portion of the city, and the remainder are dwellings, most of which are of the better class. The new \$15,000 jail and the \$6,000 addition to the city hall are about completed. Expenditures on streets and sewers for the month of September amounted to about \$15,000.

A recent canvass of the city by Mr.

the population to be 23,228, an increase of 7,069 since the United States census of two years since. It shows that 1,329 new buildings have been constructed within the H. W. Anderson, last two years.

Secretary Board of Trade.

Birmingham as a Cotton Manufacturing Centre.

BIRMINGHAM, ALA., October 21. Editor Manufacturers' Record:

After a comparatively quiet summer the iron trade is again assuming its normal condition, with an average output and a slight improvement in prices. oving freely, and the general outlook is more encouraging, but in addition to our iron and coal we want other industries. This is one of the most inviting points in the South for the manufacture goods. In the heart of a rich cotton-producing district, with cheap fuel, advantageous shipping facilities, and building sites to be procured at a nominal cost, what more could be said in our favor? Only this: With the markets of the South and our neighboring countries of South and Central America, Mexico and Cuba to supply, we have a most advantageous situa-Besides, being in direct rail communnication with tidewater, our surplus yarns could be shipped to China All of the Southern cotton facories under proper management have done well, many of them having built up a large and profitable export trade. If New England, with Southern cotton, can make her factories pay, why cannot we, where the raw material is produced, in a genial climate conducive to cheap labor, pay larger dividends than those with whom we would come into competition?

Result of Five Years of Experience.

NEW YORK, October 11, 1892. Manufacturers' Record Publishing Co., Baltimore, Md.

Gentlemen-We are pleased to renew our contract with you for another year, having tangible evidence of the value of our advertisement in your paper, and particularly we appreciate the information given in your advance sheets.

Respectfully,

THE A. S. CAMERON STEAM PUMP WORKS.

A New Steamship Line for New Orleans.

A meeting was called at the New Orleans Board of Trade on Saturday, the 22d instant, for the purpose of considering proposition of some Bordeaux capitalists for the establishment of a line of steamers o run direct between New Orleans and Bordeaux, France. The meeting was called to order, but owing to the absence of many prominent grain and cotton dealers it was suggested that the meeting be postponed for a week, and on motion of Mr. Mendelssohn the meeting adjourned. At the next meeting the proposition of the foreign capitalists will be formally made all the details of the proposed plan discussed. It is proposed to have one steamer to leave Bordeaux for New Orleans on a certain fixed day in every month, and also a steamer to leave New Orleans for Bordeaux once a month. Mr. F. Lafont, who represents the Bordeaux capitalists who are behind the enterprise, has been in New Orleans for several weeks, and says the Bordeaux men are abundantly able, and if New Orleans would subscribe one-half the capital required to establish and operate the line they would take a practical interest in it and give it preference over all rival companies in the way of freight shipments. The general purpose of the enterprise is to amalgamate interests with transportation facilities so as to insure double returns to the pro

MECHANICAL.

Notes on Machine Shop Practice.

By Albert D. Pents.

THERE is some progress made in practice, but the gait is a very slow one. Oil grooves now in shaft bearings are beginning to be looked at and questioned engineers as to whether they are doing harm or are a benefit. If this examination had been made fifty years ago it would not have been too early, for there has been a great deal of money wasted in many ways: First, making fits too close; second, chipping out grooves to lead oil to where it not want to flow; third, causing machinery to run hard where it is not necessary. Of course, in some places, like engine connections, there is almost a neces-sity for metal-to-metal fits, but ordinarily there should be an "oil shake." An "oil shake" is that degree of looseness in a bearing which, when the shaft or other part shall be perfectly free to move in its legitimate directions, cannot be strained to produce a shake that can be felt as a jar, but which produces a disturbance of the within the hearings when strained. This disturbance of the oil can be seen as it is pushed out of the side toward which the thrust is made. Oil grooves are bad in that they accumulate a grist of all kinds of dust and dirt, and this accumulation gradually solidifies and packs solid until groove is full. Then, when the journal is finally cleaned with benzine, this all is ed into the bearing and will act about as hadly as so much emery or other abradant.

Too much cannot be preached in favor of harmony. Next to the faculty for hard, persistent work is the ability and the inclination of all the men employed in a place to work together as one unit. The most natural inclination is to work for a personal record, but it is not loyalty or fficiency in manufacture or other business for a man, no matter how able he may be, trike out in a direction all alon work for his own interests first and that of the concern that employs him afterward. My observation is that this spirit and practice have ruined more able men in respo sible positions than any one other fault nameable. This subject, if studied clearly, will be found to be related to anarchy, for he who is a law to himself is of those who disregard the laws made for general guidance, and an anarchist does that. No fabric of society nor of business organization could survive one day if governed by no rules, and where every individual pulled independently of everyone else.

ModeRN methods of manufacture depe on the size of the thing to be made, as well as on the quantity. Large and rigid pieces of iron can be handled with less caution than small, frail parts, and there will not be needed so many safety checks to be considered in its holdings to prevent its straining out of shape in ope hence such pieces may be handled with more freedom and cheaply in making the operations on them. In designing jigs and fixtures for such stiff pieces it is well to remember that often the piece operated on may strengthen and support its jig, rather than the jig shall control it, and then the two together may be made light in weight and easy to handle

A word to new managers seems to be in order. By managers I mean any person in charge of works or men in a manufacturing establishment. The new manager wishes naturally to be a success, and often tries to bear fruit at once, whether he knows what he is doing or not. He will think and scheme and experiment on new methods to produce better or greater results, without knowing whether the results are practicable Now, no one expects any man, no matter what his ability may be, to produce and a-half of business during this year, post, thereby reducing the inclination to

with the conditions under which the is to operate, and a patient inclination to learn the business is more to be appreciated in a w man than a nervous haste to make a showing of his producing powers or of his ability to handle men.

IF a surface on cast iron be examined closely it is found to be a skeleton web of metal filled in with graphite or other nonmetallic substance. This web of metal will be found to be hard and brittle, generally like hardened steel, and its strength will be proportionate to the amount of iron present in the metallic state, but the soft ness will be as the metal present is widely separated and thin of section; hence a white bright iron is hard and strong, while dark gray iron is soft and weak. In soldering to a surface of cast iron it is presumed that the fusible metal only is attached to the skeleton of iron and has no adhesion to the non-metallic filling.

EVERY factory should have men in training for every position within its walls, from the highest to the lowest, so that when death or other accident removes a mar there should be another ready to step into the place fully qualified and ready to fill it.

Gem Steel Wind-Mill.

The United States Wind Engine & Pump Co., of Batavia, Ill., has recently brought out a new steel wind-mill, with steel tower, as shown in the accompanying illustration The wheel is mounted in graphite bearings so that there is absolutely no occasion for oiling, and scarcely once a year will there be any necessity for climbing the tower. There is but one Gem, but it is constructed in two styles, the direct-acting and the otion wheel, the first making stroke of the pump at every revolution of



the wheel, and the other requiring three turns of the wheel to make one stroke of the pump

The tower departs from the old square style, and is of a triangular form, with corner-posts of angle steel of tested form, all tied together by braces which are each independent of the others and can be tightened by themselves, leaving no chance for undue straining of one part to bring another into position.

It seems scarcely necessary to say that these wheels and others are made by the United States Wind Engine & Pump Co., of Batavia, Ill., so well are both the wheels and the makers known wherever wind-mills are used. This company is the largest manufacturer of wind-mills in the country, and, unless all signs fail, will do a million

any real work until he becomes familiar. They have branch offices at Omaha, Kansas City, Fort Worth and Boston, as well as local agents scattered all over the country. An application to either of these will sean abundance of artistically printed descriptive matter fully showing the merits of the goods they manufacture

The company is now at work on a rail-oad exhibit for the World's Fair grounds at Chicago that will be ahead of anything yet undertaken. The exhibit will be located close to Pennsylvania Railroad ex-

chatter. Contrary to the impression that a lathe geared in this manner would be in the way of the operator, inspection shows that it is not, and being amply protected by a shield over the gearing at the face end of the spindle, it makes a clean lathe to work with, as no oil or dirt can fly from the gearing or rub off.

The feed mechanism is conveyed by small cone pulleys of three steps connec ting with groove pulleys carrying straight and cross belts to the feed-rod, and is en-

tirely independent of the screw and rocker

gears, which are only used for screw-cut-ting. This feature will commend itself, as

the constant use of the rocker gearing for

turning soon wears them so that they are

unfit for good screw-cutting. The worm of

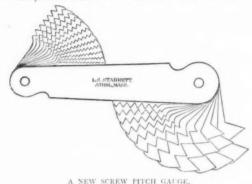
the feed-rod runs in a reservoir of oil.

The tool-holder has the range and action

of a weighted lathe carriage, and by the turn of a screw is clamped as though

it were one solid piece, and no pre-

ure or vibration can loosen or disturb



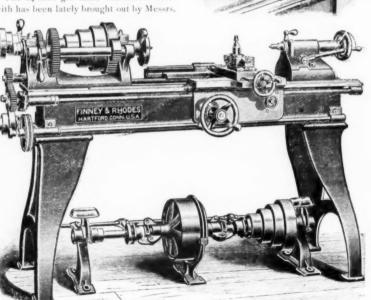
hibit, and from their tanks and standpipes will be taken the water for every locomo-tive that comes onto the World's Fair grounds. They expect to meet all their old friends there, and many new ones as

A New Screw Pitch Gauge.

L. S. Starrett, Athol, Mass., in response to many inquiries for a screw pitch gauge with coarser pitches than those in his wellknown No. 40 and No. 11½ gauges, is now making one with the following pitches: 4, 41/2, 5, 51/2, 6, 7, 8, 9, 10, 11, 111/2, 12, 13, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30. teeth are sharp and clean cut. Li No. 40 and No. 11½, it is a reliable gauge by which to grind and test a threading tool at sixty degrees, and is especially co tent for an inside tool. The illustration represents the full size of the gauge. Starrett states that another new with pitches from forty-two to eighty-four, will be ready soon

A New 14-Inch Gib Lathe.

The 14-inch gib lathe illustrated herewith has been lately brought out by Messrs.



NEW LI-INCH GIB LATHE.

Finney & Rhodes, of Hartford, Conn. | it when either at its highest or lowest adne of the special features are briefly as ows: Power gearing is brought to the follows: front of the head-block instead of the rear, as is usual. By doing so the power is applied to the spindle downward and against the lifting tendency of the tool in the tool-

The cross-feed screw in the carriage is entirely covered, passing through the centre of the lathe carriage in a direct line to the centre of the taper attachment, to which it is connected by a sleeve. At the back of the lathe-bed there is cast solid with it a. shelf nearly the full length of bed, on which is swiveled the taper bar, the slide of which is fastened to the sleeve of the cross-feed screw in such a manner that the pull and resistance are all in a straight line. When the taper bar is set at its greatest range, which is about two inches to the foot, in moving the lathe carriage by hand the resistance is barely felt by the operator.

A shaper attachment designed for this lathe is a novelty, and is made to fasten to the table on which is the taper bar. It receives its motion from a special face-plate. It has a stroke of eight inches or less, as wanted, thereby increasing the utility of the lathe, especially in small shops or experimental rooms, combining a lathe and shaper in one tool. It can be attached ready for work in less than five minutes.

Another special feature is the single belt reversible countershaft, built for this lathe and of novel construction. By the use of this counter not only is space on the main line of shafting economized, but also the expense of belting and pulleys avoided. A lathe is much easier located if but one pulley is to be placed on the main line of shafting, especially in a crowded shop with interfering counters, than if spaces for two pulleys were necessary, as would be required with the common two-helted countershaft.

drum overhead for driving the wheel. As shown, the machine weighs 4,000 pounds, but can be made of any desired length or swing.

The Palmetto and Its Products.

Editor Manufacturers' Record:

In the MANUFACTURERS' RECORD of Sep. tember 16 I find an article with the above caption. This valuable contribution in reference to the resources of the South does not present all the facts known up to the present date. Nothing, however, need further be said as to the use of palmetto as a raw material. Its value is well known in this country and in Europe, and competition has put the profits at a small margin, In regard to the production of a true fibre from the palmetto root, stem and leaf, and the manufacture of the various products therefrom, but little is generally known. From whatever standpoint we may view the subject, the question of raw material is the first to be considered. On this it is sufficient to say that it is practically limited, and I use these words in their full meaning.

There are several things in addition to this fact, however, that make it of great value to the manufacturer. I will mention only four:

 Its growth is spontaneous. It needs no cultivation. Fertilizers are unnecessary, interested, form a basis for further investigation from whatever point the industry is viewed.

Theoretically, it is well known to investigators of fibre material and fibres that fibres may be obtained from almost every vegetable growth of greater or less value, as to quantity and quality. Very many of these have received the name of "washbowl samples."

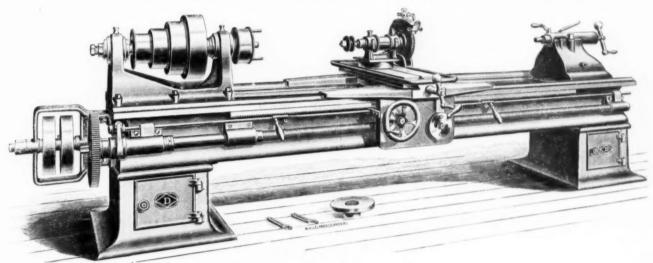
Palmetto has not escaped these theoretical individuals, who are supplied with beautiful samples of what may be—no, of what is produced from palmetto.

I have seen samples that cost at least \$7,00 per pound and were worth probably seven cents. I have seen beautiful samples of paper pulp from palmetto that cost ten cents per pound and was worth about four cents. It is unnecessary to go further in this direction.

An advance on this view is taken when some inventor has discovered a process and invented a machine to produce the fibre. Thousands of dollars have been invested and lost on this basis. It is one thing to make a machine that will produce a fibre, and it is quite another thing to produce a fibre profitably. There are in the patent office patents that have been granted for very many machines for the production of fibre from palmetto that theoretically were valuable but practically worthless.

they work with a steadiness that may be depended upon. In the year 1890 Mr. C. Richards Dodge, investigator of fibres from the Agricultural Department of the United States, examined the working of the Loomis machine and said that it produced the most fibre in a given time of any machine he had ever examined, and at the least expense. The capacity of this machine averages 2,000 pounds per hour of raw material, producing 600 pounds of dry, merchantable fibre. This is the great machine, and is to palmetto what the gin is to cotton. This machine has been running six years without repairs.

3. Manipulation of the fibre after it leaves the Loomis machine. After the palmetto is fibred the treatment depends upon what use the fibre is to be put to. These uses are various and new uses are found almost every week. It is not necessary to specify these different treatments. The great question is solved the moment the palmetto is fibred. To the various products of practical value there attach various profits. These products are not confined to the various uses of the fibre, but there are side products, so that the raw material is completely used up. The most profitable output at the present time is the "Salasee" plastering fibre, which takes the place of bair in all kinds of mortar and stucco work, brush fibre for brushes,



DIAMOND MACHINE CO,'S GRINDING LATHE.

Diamond Machine Co.'s Grinding Lathe.

The Diamond Machine Co., of Providence, R. L., has recently brought out a new grinding lathe, which is shown in the vecompanying illustration, which readily shows the construction and method of operation. Back gears are dispensed with, and there is provision for driving the work upon dead centres by a flanged pulley and driver which is placed upon the spindle in front of the main bearing.

The carriage is moved by a screw, the motion of which is reversed by a shifting flutch operated by a rod which is moved by the carriage coming against adjustable tappets as shown. The carriage has a aring of four feet upon the bed, front and ck. It is designed to use a 12-inch wheel, and if desired can be fitted with automatic cross-feed. As shown, the only way of grinding tapers is by setting ove the foot-stock centre, but if desired it can be fitted with a swinging platen pivoted at the centre of the bed, upon which is mounted the head and foot-stocks. The machine swings over the bed twenty-two inches, over the carriage twelve inches and takes between centres nine feet six inches It takes water from overhead, but can be provided with pump and self-contained water system if desired. The bed has water pans for the collection of water which flows from the work, so that it may be used over again. It is provided with a

and notwithstanding all attempts to destroy it for the past two hundred years, it continues to flourish.

2. It is ready for harvest at all times in any season. There is no "crop season," as in the case of corn, wheat, cotton and the fruits. It may be gathered any day in the year. It is gathered at all times. This is an important item to the manufacturer. No capital is needed to invest for a yearly supply, no storage to pay for, no insurance. You purchase in the morning what you wish to use for the day, as it is brought to the factory. This of itself constitutes a great profit, if all else is manufactured at

3. There is no waste. Every ounce of raw material is used. Not a single inch of stem is lost. In making brick the clay has to be tempered and moulded into shape for the kiln. Every one has to be handled and paid for. But how many come from the kiln broken, useless. The cost of these broken brick has to be saddled on the whole ones. Nothing of the kind occurs in the manufacture of palmetto. In the manufacture of flax a large amount of tow and waste of little or no value is produced. In the manufacture of palmetto fibre there is no waste.

4. There is no plant that contains so much fibre as does the palmetto. The dry, merchantable fibre is about 30 per cent, of the weight of the green raw material. No other plant gives such large results.

These facts, of great value to anyone

Taking another step in advance, we come to a machine that has been invented, patented, tested and found to be practical. It does the work and turns out the fibre in quantity. The investor sees the thing work satisfactorily and puts his money in and loses it.

The machine uses only a part of the palmetto, waste becomes unavoidable and the product limited. Unexpectedly the cost prevents profit.

Without further pursuing the various steps that have been thoroughly explored at great expense, we come to a practical business view of the subject—to the ground on which an investor must stand if he wishes returns for his money. This brings us to the present status of the palmetto business.

1. With regard to raw material. The root, leaf-stem and leaf are all used. (We are speaking solely of the saw or scrub palmetto.) The root is made into brushes, the stem into a true fibre and the leaf into mattress fibre. Every leaf that comes to the factory is used—no waste, not a leaf. Every stem, and they average about four feet in length, is fibred—not an inch is lost; no waste. The same may be said of the root. Not an ounce of raw material that is paid for is lost. The raw material is received daily just what is needed and is used up immediately.

 Machinery. The machines have been in practical running order for several years.
 Their capacity is fully ascertained, and

brooms and whisks, and mattress fibre. In addition to these, of the fourteen different articles which can be made profitably from the fibre at present, the most promising is probably ship felt.

The business is on a thoroughly practical basis and has been fully tested every way. It is a clean work. Raw material brought in one day is ready for shipment the second day thereafter. Raw material can be put in merchantable condition in ten minutes after being received. There is a model factory at Fernandina, Fla. The grounds, building, power and machinery have been built with reference to being duplicated. The exact cost, time for construction and any information necessary to the construction of a factory can be fully ascertained.

What is now needed is the development of the whole palmetto business. Factories should dot the coast from North Carolina to Mexico. There is not a more profitable opening for the investment of \$10,000,000 in the United States. There is no business with less waste or with quicker returns. Every day you know what has been the profit of the day's work.

Silas L. Loomis,

REPRESENTATIVES of a Pittsburg (Pa.) oil and gas company are said to be examining some oil properties southwest of Ashland, Ky. Several test wells will be sunk, and if they prove satisfactory some extensive developments will be made.

COAL AND COKE.

West Virginia Coal Development.

The extensions of the Kanawha & Michigan and Chesapeake & Ohio Railroads in the Kanawha and Gauley River valleys in West Virginia whereby these roads will be joined, as described in the MANUFAC-TURERS' RECORD several weeks ago, are progressing quite rapidly, and with no unen obstruction they will be ready for the tracklayers by the 1st of November. New bridges are being erected over New and Gauley rivers, the former at Narrow Falls and the latter at Twenty Mile creek. These are also well under way and will be ready by the time the tracks are laid. is stated on the best of authority that the Chesapeake & Ohio will build the contemplated branch line up Twenty Mile creek soon as the arrangements can be made. A corps of engineers are now at work on line and will have the details ready in a few weeks. There is a great demand for a short line up Twenty Mile creek for the reason that there are thousands of acres of timber and coal land lying almost in sight of the Chesapeake & Ohio which is entirely valueless with no outlet. There is, it is elieved, hardly a point in the country where a short line will do as much good and produce as much business for parent road as at Twenty Mile creek. The Gauley River Lumber Co, has large land interests along Twenty Mile, and is doing what can be done to develop it without the

In this connection the following Cincinnati dispatch is of interest: the Connellsville coke field has been or-The companies interested the McKell Coal Co., of Chillicothe, Ohio which has 30,000 acres of steam coal land along the line of the Chesapeake & Ohio between Echo and Stone Cliff, W. Va., and is now opening 20 mines; H. C. Low, of Brooklyn, N. Y., and others have se-cured 40,000 acres adjoining the McKell property; a syndicate, with Drexel, Morgan & Co., of New York, as agents, has also purchased 40,000 acres. These lands are in a body along Loup creek, Gauley and New rivers, extending into Raleigh and Favette counties. Besides this, another party represented by M. E. Ingalls, president of the Chesapeake & Ohio, and C. H. Green bought 60,000 acres of gas coal lands in the same vicinity. The Chesapeake & Ohio has contracted to build thirty-eight miles of road for the convenience of these companies. Each of the companies have contracted to have twenty mines opened by January 1, and the last-mentioned com-pany intends to put out its first coke by It is tacitly understood that the Vanderbilts are back of the whole business.

The Mine Manager, "

By Hugh Murray.

In connection with the opening out, developing and working of a coal mine, under any set of circumstances, there are many questions of importance to be thou and acted upon, but it is doubtful if any one of the questions incident to these operations is a tithe as important as the o Who shall manage this property? What sort of a man shall we seek to directly oversee and push to a practical solution the many and complex problems involved in this undertaking?

This is the question on the answer to which depends in large measure the suc-cess of the enterprise. If the proper kind of a man be secured a measure of success is certain to be attained from the first, otherwise nothing but trouble and diffic will cumber the pathway of the helpless In short, it must be allowed that the character of the manager is the *A paper read before the Illinois Mining Institute.

important factor in coal mining. It maters not how favorable the conditions be to safe and economical mining, if the management be slovenly and inefficient the mine will be financially a comparative failure, and it matters not how unfavorable ondition, with a manager of the proper calibre and experience a modified ss, at least, will be attained.

With so much depending on the character and capability of the mine manager it may be well for us as an institute, formed for the express purpose of securing in our business of mining coal greater safety, efficiency and economy, to begin our studies and discussions with a review of the qualities we ought to cultivate in more and more thoroughly equipping ourelves for our peculiar work.

It seems to me that the first qualification requisite to successful mine management is thorough knowledge and appreciation of the dangers incident to the occupation. This knowledge being ever present him, such a man as the manager ought to be will, from his first arrival at the mine in the morning until his last moment in the evening, have his eye constantly on the of danger. The boilers will come under his inspection. He will see at a glance that the water stands high enough in the gauge glasses; that the fires are properly cleaned; that the pointer of the pressure-gauge stands about where it ought to be; that with a surplus pressure the steam blows off at the safety-valve, and that everything is in order in and about the boiler-house. He will know that at the proper time the boilers have been cleaned and tested, and he will be assured that the water supply is provided for, and that the water is of good quality.

As he passes through the engine-r the engine, ropes, gearing, drum, brakes, indicator, etc., come under his observation, and a glance tells him that all is in good and safe condition. By the time he reaches the bottom of the shaft he knows that the head-gear, sheaves, guides, cages, ropeclamps or sockets and safety-catches are all in proper condition to bear the strain of y's work. So through the whole day, and through every day, wherever he is and whatever he may be doing, he is at every turn observing that the machinery, ros ways, rooms, roof, etc., are in safe condition, and that the men are exercising due care, each in his own sphere of work.

He is keen to detect a broken wire in a rope, a bad joint in the guides, a break in the roof, a dangerous piece of clod or a crevice in which an explosive mixture gas may accumulate. He knows every piece of timber in the shaft and in the roadways, detects rottenness or a break as by an intuition, and takes at once all neccessary precautions to maintain the safety of the employes. He knows the man who is careless or reckless, and as far as po sible has his eye constantly on him and the place where he works, so that no harm may befall him and that he may not bring hurt to his fellow-workmen.

This ideal manager is argus-eyed and his vigilance is sleepless. He is a disciplinarian, a martinet not to be gainsaid trifled with, but his men enjoy the maximum of safety in their occupation. With him waste and extravagance are cardinal He sees that not too much cotton waste is lying around in the engine-ro that the oils are not used too profusely or thrown broadcast around, that ties props are not thrown into the gob or left in orked-out rooms to rot and that economy in the use of supplies is practiced in every department. Above all he is economical of minutes. His mules and mule-drivers Above all he is economical never wait for anything and never collide or interfere with each other in making their trips. Tools and timbers are always ready for the man that needs them, and there is no delay while they are being brought from the top. Every man in and about the mine has his work to do and everyone does it, two men always doing the work of two men and not that of one and a-quarter. The one aim and ambition of this man is to get out more coal to-day than ever he has done before, and he lays his plans at a day six months hence to reach an output hitherto never thought of. Thus planning and with this object in view, he places his mine in a condition as o efficiency that leaves nothing to be desired.

His haulage sections are laid out so that in each one every man, mule and mine car does the largest possible service. There is no slate lying in his roadways for the feet of the mules to slip on, and no slack or mad on the rails for the car wheels to grind over. His airways are large and well kept, and the largest quantity of air his command can that the appliances at control is pouring through them. His stoppings are kept up with the progress of the work and his doors are auto in good action.

ich a man as this is not to be made. He is born to his work; born with certain physical and moral qualities that proclain him fitted for his vocation. He is, first, as to his moral characteristics, a strictly temman. He is self-contained and self-reliant, a man who keeps his own ounsel and is always master of the situa tion. He is strong-willed but cool-headed, a rapid thinker and quick to meet an emergency. A man of good judgment in his dealings with his men, his word is to be relied on; quick to acknowledge a wrong committed, but unyielding as granite when in the right.

If dissatisfaction exists among his men he knows of it, and if trouble threatens is warned of it as if by an inspiration. He knows of its cause and aims and is quick to remove the cause, or he is ready to meet and checkmate it at a moment's notice. For above all, this manager is a student of human nature. From his own mental ex-periences he knows how his fellows think and feel and act under varying circumstances, and this knowledge gives him a command and control over them that no other quality could enable him to acquire.

Such, it seems to me, are the qualities requisite in a good mine manager, and such are the qualities we ought to aim to cultivate and stimulate in those who have under their care the vast interests and the precious lives engaged in the coal-mining industry of our State.

Coal and Coke Notes.

THE exports of coal from Norfolk for Coke Shipments over west virginia central a week ending October 19th, 1892, inclusive, as cleared by William Lamb & Co., agents, at Lambert's Point, were as follows eign 3,97015 tons, coastwise 27,728 tons for the week 31,6981/2 tons; total from January 1st, 1892, to October 10th. 1892, 1,263,6901/2 tons.

MR. GEORGE H. ALLEN, of Louisville, Ky., has leased for fifteen years a tract of 1,000 acres of coal lands near Norton, Va. Allen proposes a thorough develment of the property, and will make arrangements for commencing work imm diately. A battery of 500 coke ovens will be constructed at once and make about 500 tons of coke daily at the start.

THE Clinch Valley Coal & Coke Co. has organized and elected J. P. Kroll president and treasurer; James P. Kelly, ice-president; A. H. Kroll, secretary, an William Moody, superintendent. The office is to be removed to Virginia City, where the mines are located. The new directors are Messrs. Moody, Kroll, directors are Kelly and Kroll, mentioned above W. D. Kroll, S. W. Nowlin and W. H. McGiee.

ginia & Alabama Coal & Iron Co., the Corona Coal & Coke Co. and others have organized a company for the purpose of hauling coal over the Georgia Pacific line to Greenville, Miss., and there loading on barges which will supply all Mississippi river points and adjacent territory. This plan, if carried out, will open to Alabama coal men a section now practically controlled by Pittsburg and consuming about 1,500,000 tons of coal a year,

THE Tellico & Bird's-Eye Coal Co. has found another vein of coal on its Kentucky property near Jellico, making five in all, which it will work. The coal which this company will mine is a medium between soft lump and anthracite, and they expect to commence shipments by the first of the year. A Sheffield (England) firm has applied for the exclusive agency of the above coal in Europe.

MR. ROBERT CORRICK, of St. Louis, Mo., mining engineer, will investigate 205,000 acres of coal and timber lands in Tennessee. The company which he represents will develop the property thoroughly if the indications warrant it.

WILLIAM ANDERSON has leased the San Tomas coal mines, in Webb county, Texas, and will work them to their full capacity.

Cumberland Coal Shipments.

The shipments of goal from the Cumberland region for the week ended October 22 and for the year to that date have been

Companies.	Week. Tons.	Year. Tons.
Borden Mining Co	5,834.09	192,797.00
Consolidation Coal Co	17,516.01	733,851.12
Union Mine	3.774.09	
George's Creek Coal &		
Iron Co	5,304.61	234,911.07
Swanton Mining Co		5,162.00
otomac Coal Co	2,195.04	113.953-15
Franklin Cons. Coal Co	1,810.02	55,312.08
iedmont Cumb. Coal Co.	1,386.17	8,820.09
Sarton & George's Creek		
Valley Coal Co	3,678.12	161,404.18
Big Vein Coal Co	618.06	52,437.05
nthony Mining Co	326.13	7,798.10
V. Va. C. & P. (Elk Gar-		
len Mines)	6,524.10	288,032.02
lantic & George's Cr'k		
Coal Co	723.11	34,207.05
avis Coal & Coke Co	1,824.00	86,940.00
nomas Mine	2,869,17	88,103.06
avis and Elkin Mine	1,833.15	60,114-17
umb. Coal Co. (Douglas		
Mine)	986.00	52,950.00
ik Garden Big Vein		
Mining Co	915.00	32,061.07
lampshire Mine	786.07	15,744.08
Big Vein Coal Co	7.580.03	3,089.02
American Coal Co	5,362,12	311,439-10
Maryland Coal Co	3.956.02	219,830.09
New Central Coal Co	*********	162,181.05
Total		
Previously		**********
Aggregate	2 057 842.00	2.05* 842.00

Companies.	Week. Tons.	Year. Tons.
Davis Coal & Coke Co Thomas Coke Ovens Cumberland Coal Co	1,249.00 161.09 235.00	40,488.00 7,179.07 14,354.00
Total for week Previously for year		
Year to date Same period last year	62,021.07	62,021.07 62,254.16

ON November 14 the Carolina State Fair will open at Columbia, S. C. A number of exhibits have been promised, among them a large entry of cattle and horses, and also one by Loring Brown of the poultry for which he is so well known in the South. Arrangements have been made for five per-formances of Paine's "Paris, from the Empire to the Commune," in which some 300 persons will take part. Several racing purses have been subscribed, and the city merchants expect to raise another of \$1,000.

W. J. EDBROOKE, supervising architect, Treasury Department, Washington, D. C., announces that the time for opening proposals for painting, polishing, decorative painting, etc., for the United States custom-It is reported that coal operators on the painting, etc., for the United States custom-line of the Georgia Pacific Railroad, in-cluding the Sloss Iron & Steel Co., Vir-extended to November 2.

LUMBER.

[A complete record of new mills and building operations in the South will be found in the Con-struction Department, on page 266.]

Lumber Business in the South.

From the Timberman

From all sections of the South, all the way around from Southern Missouri to Virginia, taking in almost every section and every wood, including North Carolina pine, long-leaf pine, short-leaf pine, cypress and the border country woods, such a lar and oak, comes a practically uniform report of a large demand and improved prices.

The universality of favorable conditions indicates a generally prosperous condition of the country that is gratifying to all business men. In most seasons there are a tain sections that are prosperous while others do not show business activity, but this year every section is buying freely and almost every variety of lumber is called for with equal avidity. Consequently the mill-man, wherever located, finds in his own natural market an easy disposition of his product, and is, moreover, able to make excursions from his usual field, and lumber is moving out of its customary channels in response to strong requests. South Missouri and Arkansas lumbermen are finding in their own States and through the West particularly in Kansas, Colorado and Nebraska, a demand which takes all the stock they have on hand and crowds the supply e up to the saws.

In Texas the millmen are once more finding the market for the cheaper grades of their lumber at home. Texas used to be a phenomenal buyer of lumber, but has lain dormant in this respect so long that the lumbermen begin to doubt whether or not it will ever regain its old position as a lumber consumer, but this fall the Texas demand is urgent and strong, and, as in the old days, lumber from East Texas and Arkansas is moving in large volume toward the agricultural regions of the Lone Star

All along the Gulf the cypress mills are busy, and their only trouble is that they have not enough lumber or

good buyer, though New York city is not keeping pace with the other markets in its requirements for lumber. This has a little effect on the coast mills which depend largely upon it as an outlet for their product, but even these manufacturers are not complaining, and New York, though quiet, is still consuming immense quantities of lumber of all kinds.

Poplar never was so strong as to-day, as it occupies a wider field, and its usefulness is more generally recognized than before, Not only is the demand larger, but prices are better than have heretofore prevailed,

Southern hardwoods also show encouraging features. Through a large part of the South the first half of the year was a sad disappointment in that the rain and floods delayed operations. To this is perhaps due a part of the boom in business of that section at the present time, inasmuch as the deficit in manufacture allowed but little stock to be accumulated before the present active demand opened.

Southern manufacturers generally are to be congratulated on this condition of affairs. For a year or two past it was a question whether the lumber business of the South had not been pushed beyond wise limits, but so far this year conditions have worked together to lift them out of the slough of despond and put them on a very breezy and solid elevation.

The Rich Stave Machine.

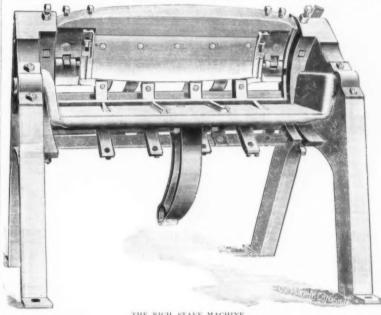
This machine, the invention of Mr. C. W. Rich, is intended to produce at a minimized cost a stave which shall almost exactly approximate a stave that we should have were we to take a stave from a barrel that has already been set up and then knocked down again.

In other words, the machine is designed to cut direct from a stave block at the least possible cost a stave which shall be curved lengthwise so as to correspond with the bulge of the barrel, and which shall curved crosswise so as to correspond with the curve around the barrel, and at the same time the stave has its chamber or chime cut on each end, and the croze or groove for the head also cut on each end. In addition to all of this the machine does its own equalizing, cutting staves of equal

Not more than half the labor is required in trussing the barrel or in planing or spoke-shaving the joints of the same, and on account of the stave being already chamfered and crozed nothing like the skill is required on the part of the barrelmaker to produce from them a perfect bar-

up a little, and the East as a whole is a any method of cutting staves in the old | Fast-Feed Hardwood Flooring Machine.

Lumber, as it comes from the saw or kilns, has many imperfections of surface, and is more or less twisted or warped. Such stuff when run through a planer and matcher cannot be well and properly worked, for the reason that the conditions



THE RICH STAVE MACHINE,



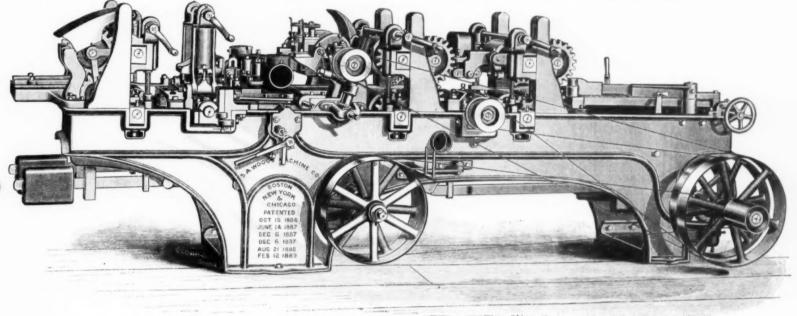
rel as is required in making barrels from

ordinary staves.

The C. W. Rich Co., of Mount Pleasant, Tenn., has made and sold during the last twelve months 3,500,000 of these staves,

are not the same while it is being planed by the top head-and held firmly upon the platen-as they are when the side heads are acting. After leaving the top head the stock takes a different position while passing the side heads, and this, with the unevenness of the bottom side and its being warped, makes the matching uneven with the top surface.

It has been customary when desiring the best or even good flooring to first surface one side of the stock before running it thorough a planer and matcher. To avoid this extra expense of preparing and handling the stock to be worked into flooring, ceiling, etc., has been the object of this new invention of a machine containing an extra under cylinder.



FAST FEED HARDWOOD FLOORING MACHINE.

hand nor the capacity to produce them in accordance with requirements. The bill stuff and flooring mills of Mississippi, Alabama and Georgia are also busily engaged, In these States the railroad requirement is an important factor, and not only the railroads but the car factories are making heavy drafts on the mills of the long-leaf Even the export business is picking

length from blocks of different or varying lengths. All of the above work, which is guaranteed to be perfect, is accomplished by one and the same stroke of the stave knife, and at the same stroke that the stave is severed or cut from the stave block.

The machinery is simplicity itself. The staves cut by this machine have a finish and smoothness of surface unequalled by

and they have been used for making flour, lime, cement, salt and produce barrels, and have given perfect satisfaction in every respect.

MESSRS. EDENFIELD & JETTON and T. M. Henderson have purchased George Booker's planing mill at Tampa, Fla., and will remove it to Ybor City.

The extra under-cutter, with appliances as shown in accompanying cut, acts in a similar manner to a buzz planer or hand jointer, reducing the bunches and twists from its lower side and taking it "out of wind." The top surface and sides are then worked from a true line given by the under surface, and the tongue and groove are thus always in line with the face of the

board. Flooring worked on this machine requires little, if any, hand planing when

This machine is fitted with weighted side chip breaker, adjustable surface chip breakers and pressure bars, square matcher bar and matcher works clamping device. The feed rolls are geared at both ends by expansion gearing, and the top cutter head hoxes are connected by a yoke extending across and underneath the bed, All ex pansion and loose gears can be oiled while the machine is in motion. The machine is twelve feet long, with six feed rolls eight and a-half inches in diameter. work six inches thick and eight, fifteen or eighteen inches wide,

The vaccess that this machine has met with throughout the country falls at a worth. The fact of mills having several of these special planers constantly in use is a recommendation for their value well worth consideration by all who wish to produce the best flooring in the least expensive manner.

They are built by the S. A. Woods Machine Co., of Boston, Mass.

44-Inch Resaw.

resawing machine of new and improved ager of the new concern

Southern Lumber Notes.

THE Southern Supply Co., of Birmingham, Ala., has made all arrangements for the erection of a large lumber plant at Cordele, Ga., and will at once contract for buildings. Site has been selected and machinery ordered.

MESSES. MILLER & PATTEN have purchased and will operate Gant Bros.' mill at Harrisburg, Ark., making a specialty of wagon material.

Messrs, Beck & Ellis Bros, will sooi sume operations at their Evansville (Miss.) stave mill.

MR. J. B. WALTSINS has purchased the Drew saw mill at Lake Charles, La., for

THE Peters Lumber Co.'s two mills at Alco, Ala., cut 3,084,498 superficial feet of lumber during September (twenty-three

THE shipments of lumber from the port of Fernandina, Fla., during Septen amounted to 5,183,817 feet, and of shingles 1,021,900.

THE Richmond Cedar Works, of Greenville, Ala., have reorganized and will hereafter be known as the Gulf Red Cedar Co. The accompanying illustration shows a Mr. W. H. Parrish is president and manigain on the first of January.

THE schooner Clara A. Phimey cleared from Jacksonville, Fla., with a cargo of 360,000 feet of cypress lumber for Boston, Mass. The lumber was sawed in the new mill of Holt & Godfrey at Satsuma Heights, on the St. John's river, and is of extra fine quality. It is the largest cargo of lumber that ever came down the river or crossed the St. John's bar by sailing vessel.

C. H. Peacock, of Eastman, Ga., was appointed temporary receiver of the Lawrence Lumber Co., of Chauncy, Ga., on the 20th instant. The Lawrence Lumber Co. is one of the largest in the South, its assets amounting to over \$500,000, and the company asked the cancellation of certain alleged mortgages which they claim were illegally held by the A. B. Steel Lumber They desired the court to put them in the hands of a receiver until the hearing of case on November 5.

MESSRS. PARDEE, CURTIN & Co. have nearly completed their new planing mill at utton, W. Va.

THE new steam tug Levy H. Petto launched from the dock of the Merrill-Stevens Engineering Co. at Jacksonville, Fla., on the 19th instant. The Petton is a omposite boat built of steel and wood, and

repairs for some time, and will start up of Leeds & Marcy, composed of Alexander Leeds and William H. Marcy.

> J. F. RANDOLPH has come mild his saw and planing mill at Salem, W. Va., which was recently destroyed by

MESSRS, ALLEN & Co., foreign exporters, of Memphis, Tenn., will ship a cargo of oak plank and staves to Guinness & Co. at Dublin, Ireland. They are now loading ressel at New Orleans.

MESSRS, J. S. & W. M. RICE'S new mill at Hyatt, Texas, is nearly completed and will start running next month.

MESSRS, STEWART & GRIBBEN, of Toledo, Ohio, have prrchased a tract of 1,800 acres of hardwood and coal lands on the Kentucky river, in Wolfe county, Ky. will erect a mill at Irvine, Ky., to cut the

MR. R. F. ROGERS, of Lake City, Fla will put in his lumber mill live rollers, slab chain fixtures and best friction feed,

THE Lawrence Lumber Co., of Chauncey, Ga., has been placed in the hands of a receiver upon its own application. C. H. Plack was appointed temporary receiver. The company asked the cancellation of certain alleged mortgages, which it claimed were illegally held by the A. B. Steel Lumber Co., until the case could be heard. The company's assets amount to more than \$4,500,000.

A DRY-KILN, together with 120,000 feet of dry lumber, the property of R. J. Shan-non, of Tipplersville, Miss., was burned on the morning of the 23d instant. There was no insurance on any portion of the property.

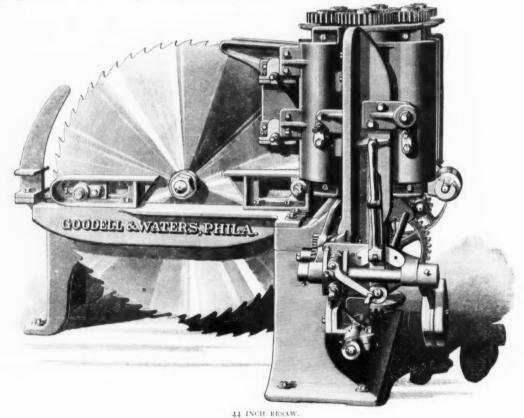
THE lumber mill of D. C. Lassiter, in the Brambleton district of the city of Norfolk, Va., was destroyed by fire on the 25th instant, together with a large quantity of dressed lumber. The insurance was very

A SPECIAL meeting of the East Texas and Louisiana Lumber and Shingle Association was held at Orange, Texas, on the 19th instant, Mr. A. Gilmer presiding. The mills of Orange and Beaumont were represented. Matters relating to freight rates and transportation facilities were discussed and committees appointed to inquire into certain needed reforms. No business of public importance was transacted.

THE several companies in which the extensive lumber firm of Kountze Bros., of New York and Nebraska, are large stockholders held their annual meeting at Sabine Pass, Texas, on Tuesday, the 18th instant. The following officers were elected: East Texas Land Co.-H. Kountze, president; B. D. Carey, vice-president; A. T. Smith, ecretary, and W. H. Hollister, treasurer. The directors of the Sabine Land & Imement Co. elected the following officers: H. Kountze, president; B. D. Carey, vice-president; F. C. McReynolds, secretary, and H. Kountze, treasurer. The director of the Texas Land & Cattle Co. elected the following officers: II. Kountze, president; F. C. McReynolds, vice-president and seretary, and F. H. Davis, treasurer. T East Texas Land & Improvement Co.'s directors elected H. Kountze, president; F. C. McReynolds, vice-president; A. T. Smith, secretary, and William H. Hollister,

THE Lutcher & Moore Cypress Lumber Co., Lutcher, La., recently cut on their land a cypress tree that measured eight feet es in diameter at the butt, and had over 2,300 rings of annual growth, showing that it was over 400 years old when the present era began.

THE Bradly-Ramsey Lumber Co., of Beaumont, Texas, recently booked an order from the Kansas City, Watkins & Gulf Railway Co. for lumber for the building of ten passenger depots along the line of that road



pattern, designed with a view of resawing rapidly and with the least possible waste of lumber. The manufacturers believe that they have successfully accomplished this result, and they claim this to be the most economical resaw on the market. The frame is cast in one solid piece, making it very stiff and substantial. The outside table is so constructed that it can be removed by loosening two bolts, leaving free access to take the saw off when required. The rolls can be tilted to cut bevel The machine will split nineteen and a-half inches wide and cut through the centre of an 8-inch stick of timber. feed is provided, by means of which boards may be run back from the saw without stopping or opening the feed rolls. It is built in two styles, with segment and straight saw, and weighs 3,500 pounds,

This machine is placed upon the market by Goodell & Waters, 3002 Chestnut street, Philadelphia, who have branch houses at 227 West Twelfth street, Chicago, and 20 Spear street, San Francisco.

again started up its mills, having arranged satisfactorily the financial difficulties in which it was involved. One of the company's orders calls for 1,000,000 feet of

THE sale of the Warren Lumber Co.'s property at Woodville, Texas, to Mr. John II. Kirby, trustee, on the 3d inst., has been confirmed by the court. Mr. Kirby represents parties who will at once arrange for the reorganization of the company and the active operation of the plant. capital will be provided for extensive ope-

MR. W. C. HEVSER, president of the Heyser Lumber Co., of Chattanooga, Tenn., returned to that city on the I inst, from a tour to the head-waters of the Tellico river, where the company owns about 30,000 acres. They expect to cut next year about 15,000,000 feet of logs, which will be rafted to Chattanooga, where the company owns an extensive saw-mill The mills have been closed for

THE St. Elmo (Ala.) Lumber Co. has I is seventy feet long by seventeen and a-half feet wide and five and a-half feet deep. is owned by Capt. A. M. Douglass and W. R. Thompson.

THE Kentucky Lumber Co.'s planing mill at Clarksville, Tenn., was burned on the 21st instant at noon. Several thousand feet of dressed lumber under the shed and two railroad cars partly loaded on the switch were also destroyed. The planes were partly insured, but the loss will aggrenearly \$10,000.

THE Argentine bark Belarmina cleared from Savannah on Saturday last for Marin with 5,902 pieces pitch pine lumber measuring 275,128 feet, valued at \$3,189, and for Oporto with 5,727 pieces pitch pine lumber measuring 280,996 feet, valued at \$3,231, with other wood products valued at \$1,025. The vessel was cleared by J. Cuyas, and the total value of her cargo was \$7,445.

Messrs. Marcy, Leeds & Marcy, of Belington, W. Va., trading as the Railroad Planing Mills, have dissolved, and the business will be continued by the new firm

LUMBER MARKET REVIEWS.

New York.

OFFICE OF MANUFACTURERS' RECORD, No. 126 Liberty Street, NEW YORK, October 26.

There is really very little change in the general condition. One thing though is certain, there is an improvement all along the line. The feeling is much better than we have known it to be for some time past. There is something which says that business has taken on an impetus, and that the things are so changed that everyone feels more encouraged than they have for some time past. This is remarked all along the line, yet we are bound to admit, or rather to confess, that this condition does not apply to yellow pine, which still remains in the dumps. In fact, we can see no encouraging feature about this wood. This is to be much regretted, as the merits of this wood certainly ought to bring it up to a par with others which have already felt the improved condition.

The manufacturers of cypress need not be surprised at any time to see the demand take on an activity which will be to some extent unprecedented. The efforts which are being made by the manufacturers of this wood to impress its merits upon the architects cannot but fail to be of benefit

North Carolina pine and its history shows what can be done in this direction. It is only the wise manner in which the friends of North Carolina pine have managed its interests which has given it to-day the foremost place among Southern woods, and we are convinced that the cypress people will take the cue from this

North Carolina pine continues to be in active demand. There is some cutting of prices here with certain concerns, but is due to abnormal condition, and we feel sure it can have no effect on the This wood is managed in general result. such an admirable manner that it must continue to be a source of profit to its friends for many years to come

SOUTHERN HARDWOODS.

There is a movement on foot among certain wholesalers in this market to advance the price of poplar. That they should be successful is beyond question. This wood is selling entirely too low, and, as we have hefore remarked, a little concerted action on the part of its friends must inevitably lead to a rise in prices.

There is a better feeling concerning

quartered oak. While the demand may ot be yet all that is expected of it, the general impression is that stocks are growing light among the yards, and that this fact will lead to an influx of orders which will be very gratifying to all.

Plain oak for good stocks is in fair de mand, and its friends need have no anxiety concerning its future.

| 138 inch and up. | \$35 coda 36 coda 36 coda 38 coda

Ash continues to be in demand for good stock, but such should be well seasoned, In this connection we may say that it is well to consider always that this market requires dry stock. The cost of holding stock here on account of large rents and heavy expenses make it impracticable to season lumber at this end.

78. 3 and 4 men. 35 code 41 co common. 22 code 25 co chainsters. 22 code 26 co Cherry is in good demand, and, as we

have stated time and time again, its friends need have no anxiety. If to-day they don't get the price they should get, they have but to hold on and all will be well. We are willing to stake our reputation on this.

Other hardwoods remain in about the same condition as when last noted.

Baltimore.

OFFICE MANUFACTURERS' RECORD, BALTIMORE, October 27.

The volume of trade for the week in the lumber and timber market has been of moderate proportions, and in some departments dealers report business as quiet. In the main, however, the situation is satis factory, and although the demand is not as prompt, still prices are generally about steady. Kiln-dried North Carolina and Virginia vellow pine is in fair demand, with receipts less liberal during the week, and all good to choice selections are a shade firmer than a week ago. Air-dried lumber is rather quiet, and stocks are fully equal to a moderate inquiry and demand Cypress lumber is steady, with the better grades in more demand, while common and rough are dull. In white pine prices keep fairly steady without change, and there is considerable business doing, several large lots having been moved during the week. The transactions in hardwoods have been few, and at the moment the inquiry is very light, the principal trade being with builders, which is now getting about over for the season. There is only a moderate demand for shingles, and the supply at present is ample, while prices for all choice grades are firm at quotations. Laths are nominally steady, with a fair supply and demand. There is a fair busiin progress throughout the planingmill section, and all the mills and box factories report a full supply of orders at remuncrative prices. The following list

represents the prices current at	this date:	
VIRGINIA AND NORTH CAROLL	NA PINE.	
5-4x10 and 12 No. 2, kiln dried	dan code in an	
6-4x8, to and 12.	22 50fa 22 25fn 23 50	
4-4 No. 1 edge flooring, air dried 4-4 No. 2 edge flooring	15 500 16 00 12 000 12 50	
4-4 No. 1 12-inch stock	12 00ft 12 50 16 50ft 17 00	
4-4 No. 2 " "	13 5000 14 00	
4-4 edge box or rough wide	8 50/11 9 00	
4-4 " (ordin'y widths)	8 con 8 50	
4-4 (narrow)	7 50m 8 00	
4-4812	11 00m 11 50 7 00m 7 50	
% narrow edge	7 50fti 8 00	
1 M 10x10 Wide	8 opta 9 op	
Small joists, 21/2-12, 14 and 16 long.	8 00/10 9 00	
Large joists, 3-16 long and up	9 50/10 10 50	
Scantling, 2x3-16	10 00(0)	
" 2x4-16, 18 and 20 " 3x4-16, 18 and 20	9 00/10 9 50	
6-4×12-16	10 000 10 50	
8-4x1216	10 00ft 10 50	
6-4×10-16	9 00(a) 9 50	
" 8-4×10-16	9 00/19 9 50	
SOUTHERN PINE.		
Siding and edge boards	14 00% 14 50	
Heart face boards	33 OO(a) 33 OO	
WHITE PINE.		
1st and 2d clear, 4-4	48 00ft 51 00	
3d clear, 4-4, 5-4, 6-4 and 8-4	48 5060 51 50 43 0060 44 00	
Good edge culls	14 50m 15 50	
Good stock	17 000 17 50	
White pine, No. 1, 4-foot headed		
pickets	13 Suin 14 Su	
4-4 selected edge	39 00/11 43 50	
6x8-4 selected edge, nox out	39 outre 45 ou	
CYPRESS.		
4-4x6, 16 feet, clear	23 50fe 24 00	
4-4x6, 16 feet, fencing	13 50/11 13 50	
4-4 rough edge	9 00m 9 50 18 50m 21 00	
HARDWOODS.	111 30111 21 00	
Walnut.		
5%. Nos. 1 and 2	75 onlie 166 on	
4-4. Nos. 1 and 2	go colli too oo	
5-4, 6-4 and 8-4	95 00/0110 00	
	125 colu	
Calls	30 oola 35 oo	
Culls	30 Olme 33 00	
Cabinet, white and red, plain sawed		
and good 1 and 2, 8 in, and up, 12		,
to 16 feet long, 4-4	35 00% 40 00	٩
5-4 to 8-4 Quartered white, 1 and 2 quality, all	35 00# 40 00	
Quartered white, 1 and 2 quality, all		9
figured, 6 in. and up wide, 4-4	50 00fm 53 00	9
Culls	10 00la 15 00	
Poplar.	as cute no pr	9
Nos. 1 and 2, 1/8	21 50ft 23 50 24 60ft 25 50	4
Nos. 5, 6 and 8-4	27 00m 30 00	3
In yellow pine cargoes, log run	3. 3.	į
stock	12 50ft 16 50	
Culls	12 50f0 14 50	
SHINGLES.		
Cypress, No. 1 hearts, sawed, 6x20.	7 50fa 7 75	ĺ

Norfolk.

[From our own Correspondent.]

NORFOLK, VA., October 26,

During the past week the business in lumber at this port has lost none of its snap and vigor which has for some time prevailed at this and other sections of Virginia. Trade at present is very good, and from the number of vessels here and shipments through other sources, indicate a decidedly forward and pronounced move ment in a very important industry. The demand for Virginia and North Carolina pine timber keeps up remarkably well, and at present prices the inquiry is sharp. There is a good supply of logs, and mills both here and throughout the saw-mill section are nearly all fully employed, and in ome cases are much behind in completing their orders. A steady demand for airdried lumber is present, while receipts continue liberal and prices are steady for the better grades, while low grades are dull and easy with less demand. There is a brisk inquiry for flooring grades, while box lumber is dull. Values for No. 1 are \$13.00 to \$13.50, No. 2 \$10.00 to \$10.50, and box \$7.00 to \$7.50. Cypress lumber is in good request, especially for the choice grades, whire common and inferior grades are not so much sought after. In shingles there is a good trade doing, and for cypress the demand is greater than the supply, with prices firm. The following list represents the prices current at this date:

Kiln-dried North Carolina pine lumber f. o. b. at this port is quoted as follows:

5-4 rift No. 2		OUNT		
5-4×10 No. 1		DO(nt		
5-4×12 No. 1		Suint		April
5-4×10 No. 2		contra		
5-4×12 No. 2		nìquo		Name and Address of the Owner, where
5-4 edge No. 1	127	Sula		-
5-4 edge No. 2	2.3	50fm		-
4-4 rift No. 1		0064		
4-4 rift No. 2		Onla		- Ann
4-4×10 No. 1		5000		
4-4×12 No. 1		50fm		
4-4×10 No. 2		OD(N		
4-4×12 No. 2		0060		
4-4 edge No. 3		5000		
5-4 edge No. 3		5060		
4-4x8, to and 12 culls or box		DOW		50
4-4x5-4 edge, cull or box	.25	Solve		-
VIRGINIA PINE.				
4-4 flooring boards (dry and clear)	13	7560	14	75
4-4 flooring boards (rough)	7	Spira	16	75
SHINGLES.				
No. 1 hearts, split, car lots	6	7560	9	75
No. 2 hearts, split, car lots	6	Stoke	6	25
No. 1 saps, split, car lots	4	756m		75
No. 2 saps, split, car lots	4	25(0)	8	25
No. 1 sawed hearts, car lots	- 8	Some	2	00
No. 2 sawed hearts, car lots		coole		50
	63	oopo	3	Open
WOOD.		made		
Hard, per cord		75(0)		00
Pine, per cord	3	7560	3	UU
STAVES.				
Red oak hogshead, prime	36	Option	38	00
Red oak hogshead, culls		QUÍN		
White oak hogshead, prime	50	COUNT.	53	COD
White oak hogshead, culls		CONTR		
White oak heading, prime	Su	$OC_i(tt)$	53	0,63
White oak heading, culls	26	ciclis		
Chaulaston				

Charleston.

[From our own Correspondent.]

CHARLESTON, S. C., October 25.

The lumber and timber market she some further signs of greater activity, and advices from milling points in the interior of the State are of an encouraging character. At this port there is a fairly active movement in progress, and shipments during the past week have been fairly active. The schooner Clara E. Bergen took 384,156 feet of lumber, and the schooner John M. Brown 420,264 feet, both for New York. The steamer Cherokee also took 21,000 feet of timber. Philadelphia shipments comprised 220,000 feet of lumber and 22,000 hingles per schooner George Churchman. Prices throughout the general list show no change, and there is a fair export demand. Merchantable lumber is quoted \$14.00 to \$16,00 for city sawed and \$12,00 to \$14.00 Square and round timber for railroad. \$9.00 to \$13.00 for railroad and \$8.00 to \$11.00 for raft. Dock timber is steady at \$4.50 to \$6.50 and shipping \$8.50 to \$10.50. Shingles are in good demand, with stocks generally light and prices unchanged. In freights there is a moderate demand for handy-sized vessels for coastwise trade, and rates on yellow pine lumber are steady at \$4.75 to New York and \$5.00 to Phila-Crossties to New York are

quoted at thirteen cents each for 36-feet lengths. Late contracts for lumber to Providence, R. I., were made on private

EXPORTS OF LUMBER FROM CHARLESTON FROM SKPTEMBER 1, 1891, TO OCTOBER 21, 1892.

Exported to	1892-'93. Feet.	1891-'92. Feet.
New York	4,314,312 762,000 440,000	4,456,040 633,000 534,000 908,000
Total coastwise	5,516,312	6,621,040
Great Britain	449,759	368,000
Total foreign	440.759	368,000
Grand total	5,957,071	6,989,040

Savannah.

(From our own Correspon

SAVANNAH, GA., October 25.

There is every indication of an active movement in lumber circles both here and at all interior points throughout the State. The shipments during the week have been very liberal, and there is a good general demand for all good to choice selections of manufactured lumber at steady values, The demand from the West Indies and South America is expected to revive in the near future, and the exports for the week show that shipments, both domestic and foreign, are improving. The total exports aggregate 3,360,000 feet of lumber, 150,000 shingles and 17,780 feet of crossties. Among the shipments during the week were 18,800 feet pitch pine for Bluefields, 280,996 feet of lumber for Oporto and 275,128 feet for Marin. Coastwise shipments have been very fair. The list of values continue steady, and all the mills are fully engaged for quick deliveries. Easy sizes are quoted \$11.50 to \$13.00, ordinary \$12.00 to \$16.50, difficult \$14.00 to \$25.00, flooring boards \$14.50 to \$22.00 and shipstuffs \$15.50 to \$25.00. Freights are dull and nominally steady, with rates unchanged, and a liberal offering of tonnage. Sailers are quoted at \$4.25 to \$5.00 from this and nearby ports of Georgia for a range including Baltimore and Portland, Me. Timber is quoted 50 cents to \$1.00 higher than lumber rates, To the West Indies and Windward rates are unchanged, to Rosario \$16,00 to \$17,00, Buenos Ayres or Montevideo \$14.00, Rio Janeiro \$15.00, Spanish and Mediterranean ports \$12.00, and to the United Kingdom for orders £4 tos per standard. Steamer rates to New York are done at \$7.00, Philadelphia and Boston \$8,00 and Baltimore \$6,50.

Brunswick.

[From our own Correspondent.]

BRUNSWICK, GA., October 25.

The lumber trade of this port during the past week has been of fair proportions, and, in keeping with the other industries of Brunswick, shows a marked improvement over last year. Work on the bar is being pushed forward with all possible dispatch. and soon the harbor facilities will be such that vessels of greater tonnage will pass out to sea with the greatest of ease. The shipments during the week have been rather larger than usual, and the demand is such that throughout the milling section of the State every mill is reported working up to its greatest capacity. Among the chooners leaving during the week ar e the Eva A. Danehower with lumber for New York, John R. Halliday for Philadelphia, Charles D. Hall for New Haven, Harry Prescott and Agnes L. Grace for Boston, and the Frank M. Howes, with 510,000 feet of lumber, for Boston; also the Charles F. Tuttle for the same port with 17,000 cross ties. Among the charters are the schooners Eila G. Eells, 243 tons, to New York, with lumber at \$5.121/2, and the schooner C. H.

9

lumber \$5.25, option of Brunswick \$4.371/2.

Mobile.

MOBILE, ALA., October 25. The volume of trade in lumber and timduring the week under review has been of fair proportions, and indeed the busiless of the port during the month has been of extra proportions for this period of the lumber year. The demand for both hewn and sawn timber is more pronounced, and latest advices from the London market represent more activity, with values steadier at fractionally higher figures. Hewn timber here is firmly held from eleven to fifteen cents per cubic foot, 100-foot average, on a contract basis of thirteen cents, and sawn timber is in good request at eleven cents per cubic foot. As to lumber, the situation may be written as satisfactory, with a most encouraging outlook. The trade with the West Indies and South America gives evidence of greater activity in the near future, and during the week several orders have been placed at remunerative figures. Reports from the interior sh w that throughat the saw-mill sections of Alabama and Mississippi there is a steady output, many of the milfs being behind in their order The two saw mills at Alco, owned by the Peters Lumber Co., made the heaviest cut of lumber in September ever known in the history of the company, the output in twenty-three days being 3,084,498 feet. The Kimball Lumber Co, has been compelled to shut down for a few days on account of insufficient yard room in which to store their lumber. They have eight vessels chartered, and are now running again as usual. The shingle industry is holding up remarkably well, and perhaps was never in a more satisfactory condition. Cypress shingles are in sharp demand, especially for the lower grades or "saps," the orders for which have been far in excess of the The shipments of hewn timber from the port of Mobile for the week ending October 21 was 75,322 cubic feet, and since September 1 346,267 cubic feet, against 141,456 feet last year. Of saw timber 79,463 cubic feet were exported during the week, and since September 1 265,664 cubic feet, against 5,701 feet last last year. The total shipments of lumber during the week were 1,379,157 superficial feet, and since September 1 7,628,948 feet. against 5,612,465 feet for the correspond ing period in 1891-92.

Memphis.

MEMPHIS, TEXX., October 24.

Memphis lumbermen have a new outlet for shipping to Ohio river points. The gap between the Tennessee Midland and Paducah, Tennessee & Alabama Railroad has been completed, and trains are passing through from Memphis to Paducah, Ky. Articles of incorporation have been filed at Little Rock by the Martin Lumber Co., of Bolinger, Ark., with a capital stock of \$20,000. The officers are: S. H. Bolinger, president; M. S. Bolinger, secretary, and E. Wood, treasurer. In lumber the shipping business at this point has been improving steadily, much to the satisfaction of dealers. The supply at the yards is large, amply sufficient for present and prospective calls, and there is no scarcity in grades except in poplar. The demand for cottonwood is increasing, as it is taking the place of poplar for many purposes Plain-sawed red and white oak active demand, and quarter-sawed is meet-ing with better sale than for some time past. Ash of all grades finds ready sale and is in good supply. There is a good call for cypress and a fair call for sycamore. Walnut is almost out of this market, but occasionally a few sales of choice lots are

the European markets.

Local dealers are doing a nice business, there being a large amount of building in progress. The local country trade is also good, but the lateness of the cotton crop and light receipts affect trade generally unfavorably.

Manufacturers of boxes, barrels, etc., are working on full time and are well supplied with orders.

Quotations remain steady and	un	chai	iged.
BLACK WALNUT.			
1st and 2d, 1, 1½ and 2-inch	afic.	exder	70.60
Common	2.5	Stafes	40.00
Counter tops	20	Cooke	the ver
	40	COM	110 00
ASH.			
1st and 2d clear, 1 to 4-inch	24	goln.	30 00
Common	12	Gotes	14 00
CVPRESS.			
	22		24 00
1-inch, 1st and 2d clear			
11/4. 11/2 and 2-inch			36 00
Fencing 1x6, 16 feet	15	Other	16 00
POPLAR.			
r-inch, 1st and 2d clear	24	ooke.	25 00
15/2 and 2 nch, 1st and 2d clear	26	DORE	28 00
Common boards	14	OOfte.	16.00
Dressed, 1, 15 & 2-in., 1st & 2d clear.	28	coche	30 60
Common dressed, t-inch	16	coles	17 50
Squares		Sofee	
			20.00
COTTONWOOD.			
1 to 3-inch mill run, culls out			12 00
Squares	12	5000	16 00
RED GUM.			
est and 2d	16	outre	20 00
Common and culls	8	oute	10 00
OAK.			
1 to 4-inch, 1st and 2d	3.6	cula	26 00
			15 00
Ouarter oak, 1-inch, 1st and 2d			32 00
Quarter oak, 1-mcn, 1st and 20			
Quarter oak, 114-inch and up	34	OO(1)	36 00
White & higher,			
VELLOW PINE.			
ist and 2d, 1½ and 2-inch			20 00
Dressed			30.00
Flooring, 5 and 6 d and m		5000	
Flooring, 3 and 4 d and m	17	Sum	20 00
2d flooring			17 50
Heart step lumber		5000	
Ceiling, 1st and 2d, 1/4, 5% and 1/2	17		20 60
Ceiling, 1st and 2d, 34 and 36 Common f. o. b. Memphis	10	DO(a	
Common f. o. b. Memphi	S.		
Car lots	12	50kg	
TIMBER (LOGS).			
Poplar	6	cofa	10 00
Cypress			9 00
Cottonwood			4 00
Gum			4 50
Oak			12 00
			13 00
Ash			50 00
Black walnut	13	Other	20.00
SHINGLES.			
No. 1 heart cypress, 16-inch		CORE	
No. 1 sap, 16-inch	2	25/11	A 100 (100 (100 (100 (100 (100 (100 (100
LATH.			
Destar	-	eviler	2 00

PITKIN C. WRIGHT.

Beaumont. BEAUMONT, TEXAS, October 24.

As mentioned in previous letters, falling off in transportation facilities has restricted operations in lumber both at this point and throughout the entire milling section of Southeastern Texas and Louis iana. The scarcity of cars has prevented shipments, and the consequence is that the ime of business in this line of transportation will show a large falling off for the current month compared with Septemher. Otherwise business throughout this section may be called fairly active, with a good general demand and values firm and hardening. The Beaumont Journal in its market review says: "Business is general thing good enough for all classes of material, but shipments for October will show a falling oft from those of the past month. It is no fault of the manufacturers or their customers that such a record will be made, for the former have sold the stuff and are ready and anxious to deliver it, but they do not own railroads, and cannot compel those who do to deliver the lumber they have sold. This condition has resulted in a slight increase of stocks at milling points, but while this is the case at the manufacturing end of the line the dealers are running low on supplies, and when the car service improves stocks will oved and matters evened up. the shingle situation the market was never in better shape, while shipments are made as fast as stock can be manufactured, and at a slight advance in values. At Orange a special meeting of the East Texas and Louisiana Lumber and Shingle Association was held on the 19th inst., at which matters of importance were discussed in relation to transportation and general reform. All the mills around this thriving town are There is at present a dullness in the busy, and have been sawing up to their

Valentine, 611 tons, Savannah to Baltimore, foreign export trade, owing to oversupply in full capacity. There is also a strong movement around Westlake and Lake Charles, La., and the demand for railroad timber is very spirited. At Sabine Pass the annual meetings of the following companies were held on the 18th inst.: East Texas Land Co., Sabine Land & Improvement Co. Texas Land & Cattle Co, and the East Texas Land & Improvement Co. rectors and officers of each were duly elected for the ensuing year. The aggregate wealth of the above companies is very large, and the money they will spend for improvements and cause to circulate through many sources will benefit the public at large.

Business Conditions in the South.

THE number of building permits issued in San Antonio, Texas, from January 1 to September 30 of this year has been 1,122. The value of buildings for which permits were issued for the same period was \$1,156,-649 and the value for the month of September alone \$45,424.

SINCE January t the population Greenville, S. C., has been increased by nearly 500 people. An unusual amount of building has been going forward, but houses are scarce and more needed. The total amount of money expended in buildings and improvements since the first of the year is somewhat above \$200,000.

BUSINESS in Montgomery, Ala., is steadily gaining in volume as the fall trade comes in, and merchants and commission look forward to unusual prosperity during Much interest is being display the year. in real estate matters, and a considerable amount of building is being done.

DURING the past week several large transactions have taken place in Atlanta, Ga., real estate. A lot forty feet front by 180 feet deep with a store on it was sold by Rich Bros. to C. A. Davis for \$76,500. property opposite, with a frontage of twenty feet on Whitehall street, sold for \$40,000. The well-known farm at Kirkwood, owned by Sid. Phelan, containing 200 acres, is reported as sold for \$200,000. The old Peachtree property, the house of Colonel Mynatt, has been bought by Humphries Castleman for about \$35,000. Another large property in the city, along the Western & Atlantic Railroad, changed hands a short time ago, the price given being

THE new city directory of Roanoke, Va. shows over 10,000 names, and the total population of the city, estimated, about 24,000. In the past two years nearly 1,500 houses have been erected, and 300 more are now under construction. The residences average in value between \$2,500 and \$3,000. Within the corporate limits there are 3,069 residences occupied by 3,586 families.

DURING the past few weeks there has been unusual interest in real estate at Savannah, Ga., and it is estimated that since September 1 the sales have aggregated over \$100,000.

ADVICES from Cedartown, Ga., show that the general improvement in throughout the country has been felt there to a marked degree and business has increased materially. The land company is preparing to carry on a number commenced very shortly. Daniel Baugh, of Philadelphia, Pa., the president of the land company, has been in Cedartown recently, and has determined to make every effort to advance the interests of the place Several new buildings are nearing completion and work has been commenced on a complete sewerage system. During the past summer the electric-light and waterworks bonds were sold at par, and the town now has a complete system of both.

IRON MARKETS.

Philadelphia.

From our own Correspo

PHILADELPHIA, October 26.

The general transactions in the iron market during the past week have been of an encouraging character, particularly so for the makers of structural material and plates and sheets. In pig iron the demand is very active, and a large business is being done at quoted rates. Many more large orders for forward delivery could be se-cured if the concessions which generally prevailed a few weeks ago from quoted rates were now granted. But makers are refusing to make these concessions, realizing that consumption is keeping pace with a gradually growing production. other hand, while prices are firmly held, the tendency recently evinced in some quarters to push prices to a higher level has not materialized. It seems to be the general opinion among producers that active market, even at the present low prices, is preferable to insisting on much higher prices, and thus running the risk of again demoralizing trade by unduly stimulating the already increasing production. The result is a very satisfactory feeling among the makers, who are meeting a demand without making the concesssions consumers expected some time The following quotations present a fair average for the leading brands in this market, the usual concessions according to distance, etc., being made on Southern brands delivered south and west of this

Paratrick .														
Standard	Pa.	No.	1	X	 				.,		\$15	octa	15	50
11	3.1	No.	2	X							. 14	cic. (et	14	50
15	Fors													
Southern														
	4.4	1	χ,	2						,	. 13	School	1.4	25
4.4	WIBV	for	36	٠.							. 12	7560	13	25

Pittsburg.

[From our own Correspondent.] PITTSBURG, October 26.

From now until the beginning of 1893 the iron and steel markets, and in particular the pig iron market, will not display much activity. In the past few weeks there has been considerable stock disposed of, and about all that will be done in November and December will be the delivery of the material sold. The sales have already begun to slow up, but as everyone is well provided for until February at least, the rates are not expected to If anything, the disposition is suffer. toward a stiffening in prices, although no positive advances are likely to be made. inquiries keep up better than was actually expected, and there has been no tendency toward a pinching process by There was considerable apprehen buyers. sion a short time ago when the Carnegie Company jumped into the open market just at the time when the first symptoms the revival became plainly They began to cut and tear into the market at a rate that was terrifying to the brokers and lesser furnacemen, but the outco was less disastrous than was expected. The demands have held up and prices have not receded, and as stocks have been well reduced, the situation is much better all around than was expected by the majority of men in the trade

The quotations of last week remain in force to-day. A generally good demand for all grades continues, especially for Bessemer and forge irons at \$13.75 and \$12.50 respectively. Foundry iron keeps up at about \$14.10 for No. 1 and \$13.10 to \$13.25 for No. 2. The quotations are:

Gray forg	e				*			 					. 9	12	Scila	12	75
Mill iron.				 . ,										12	50(a)	12	75
Foundry	No.	1		 						٠				14	00%	14	25
14	No.	2				,			. ,				*	13	ou(a	13	25
Bessemer														1.2	7560		

The sales of the week were rather few and unimportant, of the actual necessity class, including 5,000 tons of Bessemer at \$13.75; 8,000, 2,000 and 3,000 tons at same rate, immediate delivery in Pittsburg,

Wheeling, W. Va., October 26. There is a considerable degree of firmness and good feeling in the pig iron market in the Wheeling district. It can hardly be said that conditions have sho any marked improvement since the last report, but it will be remembered that they ere quite encouraging at that time. stiffening in price has not extended beyond Southern grades yet, but the fact that consumption seems to be keeping pretty well up in the race with production cause feeling of firmness that will probably result in better prices all around before long. There is no scarcity whatever of any brand in this market, but the reports that come from elsewhere of difficulties experienced in securing just what is wanted are ominous.

The firmness of the pig iron market has led to heavier buying, and several large consumers are reported to have offered to place good-sized orders wherever they can secure concessions. The rates offered now are as high as those which were snapped up a very short time ago with great avidity. oncessions are harder to get than they have been at any time in a year, and business is getting down to a very satisfactory

Prices show no change from last week stad as follow

STREET ST	te duote	er ern re	011		4.0							
No. 1	Northern	mill ir	011					;	£12	50(11	\$12	75
Good	lough Sor	thern	mii	l i	FO	n.			12	2560	12	50
No. 1	Northern	founds	5.						14	7500	15	00
No. 2	6.6	4.6							13	85(11	14	00
No. 3	* *	0.0							1.3	3460	13	50
	ner								13	75m	1.4	00

Chicago.

CHICAGO, October 22.

The Chicago pig iron market is active inquiries are numerous both for large and all lots. Since our last report a number of large consumers have come into the market, and negotiations are now pending to cover. These large inquiries have come from consumers who have bought previously sufficient to cover them during the remainder of the year; they realize, however, that the market conditions are stiffening and therefore desire to cover now for their consumption well into next year. demand is distributed between soft and foundry grades of both Northern and Southern cokes, the latter being largely called for. The firmness reported during past two weeks continues, and a number of companies have been obliged to refuse all further orders on certain grades for delivery this year, as their entire make will be taken by contracts previously booked.

Lake Superior charcoals are held more firmly than has been the case any time during the last six months; \$17.00 Chicago is now the bottom figure on all but one or two outside brands.

We quote for eash f. o. b. cars Chic	ago:
Southern coke No. 1 foundry \$14 50fe	15 00
No. 2	14 00
Ohio silveries No. 1	
16 No. 2 16 oolu	16 50
" strong softeners No. 1 16 5060 No. 2 15 5060	
Lake Superior charcoals Nos. 1 to 6., 17 colo	17 50
Tennessee charcoal No. 1	22 00
Rogers, Brown & Merw	

Cincinnati.

CINCINNATI, October 22.

The market during the past week has been as satisfactory as could be expected. The Columbian demonstrations have interfered to a considerable extent with busi-The recent advances in quotations on Southern coke iron have also had their effect. Buyers are loth to believe that the long-looked-for bottom was reached some time ago, and that purchases must now be made at higher figures. Numerous con-tracts of moderate size have been taken at asis of \$8.75 cash Birmingham for gray forge and \$9.75 for No. 2 foundry and No. 1 soft. Some consumers who have been holding off expecting to hammer prices means of reorganization was appointed at

down twenty-five cents per ton are now confronted with an additional advance of Several of the largest twenty-five cents. companies are holding gray forge at \$9.00 and No. 2 foundry at \$10.00, Birmingham basis, and are not pressing for orders even at these prices. Cars are scarce, consumer are needing iron quickly and the chief trouble is to get it forward. Looking at the situation from the standpoint of Southern iron-maker, it seems that not only are the recent advances justified, but unless the current of events is changed it will be possible to restore quotations to the level of a year ago. Reports from the North and East show that the furnaces in those sections have taken no decided step, and there seems to be a very conservative feeling among them about marking up Bessemer and lake ore foundry values. irons, while firmer, are offered as hereto-Those well informed think if the fore. reduction of stocks in October is comparable to the loss in September it will at once cause Northern and Eastern irons to advance. Ohio softeners, silveries and charcoals continue in good demand withut change

We quote for cash f. o. b. cars Cincinnati: outhern coke No. 1 foundry \$13 7560 14 or No. 1 soft.
Hanging Rock cose No. 1.
Cirrenal No. 1.
Tennessee charcoal No. 1.
Jackson county stone coal No. 1.
Southern coke gray forge.
mittled. Rogers, Brown & Co.

St. Louis.

Sr. Louis, October 22.

The market continues at the advanced prices of last week. Sales during the past week have been in excess of those for same period for several months past. Buyer have begun to realize that Southern furnaces are largely sold ahead, and they are evincing a desire to place orders at ruling prices to cover longer periods than furnaces

Southern	coke	No.	1									. 3	11.2	25,60	14	50
***	46	No.	2										1.3	1.0310	13	25
1.5	8.6	No.	3							v			12	5000	12	75
6.1	gray															25
6.0	chare															00
8.0	1.6		No	. 2	١.,								25	0,10,1600	15	50
Missouri	4.0		No										1.4	Sofer	15	00
1.5	4.1		No										14	CALIFOR	1.4	50
Ohio soft	eners.												16	50(0)	17	00
Lake Sup	erior	car	whe	el									125	moter	18	25
Southern		4.0	4.3											50,60		75
Frick's C	muel	swill	les fe	111	21.0	di	v	C	63	k.	en.			600	5	65

Louisville.

ROGERS, BROWN & MEACHAM.

LOUISVILLE, October 22.

The market has ruled rather less quiet during the past week. Trading has been smaller scale, though the demand is well distributed. The car works, rolling mills, jobbing foundries and sheet mills all report excellent demand for finished goods. which is but natural for this time of year. The outlook is promising, but it is feared prices may be too hastily advanced and the permanency of the natural improvement thereby be greatly impaired.

	0.817.0	833.75	20.1	1.43	1 5	11/2	1. 10	0.00	43.450			
Southern	coke	No.	1.						. 813	oota	13	5
++	0.0	No.	2.						12	25/11	12	5
4.6	8.6	No.	3.						. 11	75(11)	12	()(
4.1	chare	oal !	No.	1					. 16	00(a	17	O
54	5.0	1	No.	2.					. 15	pote	15	5
			080									
Neutral o	oke								. 11	5060	12	0
Cold shot	1								. 11	25/11	11	5
Mottled									. 10	7560	11	0
CAL	R-WHI	siet.	ANI	0	LAI	LL	H.A	11.18	E. 180	ONS.		
Southern												
4.4	othe	r bra	nd	5.1					. 18	5000	19	50
Lake Sup	erior.								19	SUM	20	50
										8 (

Southern Iron Notes.

THE stockholders of the Fort Payne (Ala.) Coal & Iron Co. held a meeting in New York city on the 19th instant to consider plans for reorganization. The ceiver of the company, Mr. W. K. Sheldon, of Fort Payne, showed that the concern's debts, less assets, amounted to about \$400,-A committee to devise ways and 000.

Mr. Sheldon's suggestion. It is composed of the following: R. P. Kingman, of Brocton, Mass.; C. A. Williams, of Providence, R. L.; J. R. Clark, of Boston; E. J. Fletcher, of Brocton, and W. L. Lowell, of Newton, Mass.

THE Unaka Iron Co. has completed its two ore washers at Unicoi, Tenn., and placed them in operation. Two other mines will be ready to ship from in about a

NIXON BROS., lessees Gadsden (Ala.) furnace, put it in blast the first of the week. Its daily capacity is 115

THE Augusta Mining & Investment Co. of Cedartown, Ga., has been placed in the hands of a receiver upon the application of several New York creditors. Mr. C. W. Haskins, president of the company, is red the work of preparing the properties for development will continue, as the novement is friendly and good and not harmful to the company.

GENERAL NOTES.

Brief Mention of Various Matters of Current Interest,

THE Milburn Gin & Machine Co., of Memphis, Tenn., was sold on October 18 to satisfy a mortgage for \$147,000 held by the German Bank of that city. The amount paid for the plant was \$156,000. The property and buildings originally cost \$506,000, and were recently estimated worth \$236,000. The lot is 300 by 400 feet on Broadway, and has direct track connections with all railroads. It is understood that the machinery will be sold and the buildings used by the American Cotton Oil Co. for an oil mill.

MESSRS, EGAN & FRIDAY, who recently secured contract for completing the Charles ton (S. C.) jetties, have commenced dredgand will proceed with the work as speedily as possible.

THE Southern Texas Orchard & Vineyard Co. has been organized at Galveston, Texas, and proposes cultivating 1,000 acres in fruit trees. B. F. Hutcher, Jr., is general manager of the company,

THE Standard Oil Co. has con four large oil tanks at Florence, which city it intends to be headquarters in North Alabama for coal oil.

THE Bloomfield Kaolin Co, has just refused an offer of over \$50,000 for its mines at Bloomfield, Lake county, Fla.

THE seven banks in Columbus, Ga. have organized a clearing-house in that city for convenience in carrying on busin Each bank in rotation furnishes a man to manage the clearing-house for one month. The officers elected are E. Gunby Jordan, president; William Slade, vice-president; A. O. Blackmar, treasurer, and E. H. Epping, secretary. The arrangement will greatly facilitate business, as each day everything will be cleaned up and the net balance be handed over to the banks to

ARTICLES of incorporation have been filed with the secretary of State of Arkansa by W. H. Ragland, H. C. Bateman, H. F. H. Eberts, George M. Streets and A. G. Ryley, of Little Rock, for a company to be known as the Little Rock Bridge Co. The capital stock is placed at \$250,000, divided into 10,000 shares of \$25 each, of which \$500 has been subscribed. It is the intention of the company to erect a bridge across the Arkansas river at Little Rock. tion was filed with Judge J. Erb, county judge, praying for permission to erect the This was granted, and it was dered that the company have the privilege in machinery and mill supplies.

of erecting the bridge and maintaining it during a term of fifty years. The rates of toll are not to exceed five cents for each person on foot, five cents per head for live stock, person and horse twenty cents, onehorse wagon and driver twenty-five cents, two-horse wagon and driver fifty cents, four-horse wagon and driver sixty cents, six-horse wagon and driver, \$1,00 and for each person in a vehicle or street car ten A short time since the King Bridge Co, offered to build a bridge for the county on the basis of the latter making it a toll bridge and applying the receipts in payment for the structure.

a recent meeting of farmers held in Meridian, Miss., a Farmers' Institute was organized for the purpose of encouraging wheat growing. It is expected that a large flour mill will be erected in Meridian shortly, provided that the parties interested can feel assured of a good share of wheat from the neighboring section Samuel Bailey is chairman of the institute, and W. C. Gresett, secretary.

THE government work of deepening the Colbert shoals on the Tennessee river below Florence, Ala., will commence during this week. These shoals are the only serious obstacle to navigation on the river from its mouth to Mussel shoals, and when removed will give free navigation for large boats during nearly every month in the

THE unfortunate stockholders of the Georgia-Alabama Investment & Develop ment Co., of Tallapoosa, Ga., have for some time past been endeavoring to reganize and form'a new company called the Tallapoosa Real Estate & Industrial Co. This plan was decided upon after the col-lapse of the old company, when a committee appointed by the stockholders in various cities had visited the company's property and afterward submitted a report in regard to it, recommending also a plan of reorganization designed with a view of managing the property and interests in such way as to make them most valuable as assets, and thus entail the least possible loss to ste holders. So far as can be ascertained the plan of reorganization is a fair one for all tockholders, and with careful and judicious management it is probable that the property can be so developed as to be valuable.

THE Statesville (N. C.) tobacco business has been nearly 25 per cent, greater this than the preceding year. Manufacturers are making large shipments daily, and if the Present trade keeps up many will have disposed of all their stock by the first of the year. Stafford Bros. have decided double their capacity next year, and Irvin & Poston, Miller & Brown and Key & Co. will largely increase theirs.

THE gross earnings of the Baltimore & Ohio for the first three months of its fiscal year were \$7,106,593, an increase of \$192,-409 over the same period of the preceding year. The expenses were \$4,729,223, an increase of \$198,444. The gross earnings for the month of September were \$1,954,-561, an increase of \$143,914; expenses \$1,149,630. This month shows the largest earnings, both gross and net, of any in the history of the company, due partly to the heavy traffic incident to the G. A. R. ennent at Washington.

MANAGERS of mills, factories, furnaces, mines, etc., and parties starting manufacturing enterprises and needing machinery or supplies of any kind will find it profit able to consult the advertising columns of the MANUFACTURERS' RECORD. Its pages contain names of the best houses in country among manufacturers of and dealers

CONSTRUCTION DEPARTMENT.

W E PUBLISH, every week, a whatever kind, projected anywhere In the South; every railroad undertaken, and every mining company organized. This information is always fresh, and, by enabling manufacturers to correspond with the projectors of such enterprises before their supplies of machinery have been purchased, is of great value. Manufacturers will find it to their Interest to read this department

* Means machinery is wanted, particulars of which will be found in "Machinery Wanted"

Re In correspondence relating to matters reported in this paper, it will be a favor if it is dated that the information was gained from the MANUFACTURERS' RECORD.

Anniston—Handle Factory.—A. Culberson has used the Anniston Planing Mills and, in associa-on with S. R. Horton, will convert them into a andle and hoop factory for operation.

Sand Mountain Saw Mill. B. C. Barton will rect a saw mill on Island creek to cut poplar, ut, gum and oak

ARKANSAS.

Bolinger - Lumber Company. - The Martin Lum her Co. has been incorporated with a capital stock of \$20,000. S. P. Bolinger is president; M. S. Bolinger, secretary, and J. W. Wood, treasurer.

Camden Saw Mill. Barnes & Van Wagon will likely rebuild at once their burned saw m at Hudson Switch, near Camden.

Clarendon Saw Mill - H. S. Ellis will erect a ircular saw mill.

Clarendon Saw Mill. The White River Stave Co. will put in another saw mill.

Jonesboro - Lumber and Cooperage Plant. The Springfield (Mo.) Lumber & Cooperage Co. is greatly improving its Jonesboro plant, putting in boilers, engines and other machinery.

Little Rock Bridge. The Little Rock Bridge Co., mentioned last week, has been incorporated by W. H. Ragland, M. C. Bateman, George M. Street, A. G. Ryley and H. F. Eberts with a capi-

Little Rock—Electric-light Plant.—The Con-sumers' Light & Power Co. has been incorporated to establish an electric-light plant; capital stock \$200,000. H. G. Allis is president, and George R. Brown, treasurer; machinery all purchased.

Little Rock—Saw and Planing Mill.—C. E. Hay den will erect a saw and planing mill of 80,000 feet capacity daily.

Little Rock—Cottonseed-oil Mill.—The Crescent Oil Co., of Memphis, Tenn., intends starting a cottonseed-oil mill in Little Rock.

Little Rock—Lumber Mill.—W. E. Lenon has started another lumber mill.

Morrillton—Electric-light and Water Works, etc.—The American Electric Co., of Philadelphia, Pa., is endeavoring to arrange for the erection of an electric-light plant, water works, ice factory, soap factory and cottonseed-oil mill in Morrillton.

Nettleton-Barrel Factory.-F. Keich is puttin new machinery in his barrel factory, and ma-build a saw mill soon.

Newport—Ice and Cold-storage Plant.—The Newport Ice & Cold-Storage Co. has been incorporated with a capital stock of \$25,000. Thomas J. Watson is president and manager, and W. C. Wishon, secretay and treasurer.

Pine Bluff—Car Shops.—Efforts are being made y the citizens to secure a bonus to induce the t. Louis & Southwestern Railroad to build car

Paragould—Shingle and Stave Company.—The Bard Shingle & Stave Co. has been organized with E. H. Watkins as president, and Mr. Ladew as

Sherill-Planing Mill.—The Phonix Lumber Co. is building a planing mill addition to its plant Silver Mining.—J. M. Housley & Springs, will open silver mines.

Vanudale-Saw Mill.-D. C. Cole will erect a

Bartow Phosphate Plant, etc. R. R. Foote, of uburndale, has organized a stock company to

develop phosphate mines and erect plant near

Jacksonville-Shingle Mill. Messrs. n have erected a shingle mill with a daily

Tallahassee—Brick Works.—W. O. Ames has at in a new boiler at his brick works.

Tampa—Electric-light and Power Plant.—The Consumers' Electric-Light & Street Railroad Co., reported last week as organized, has obtained a charter. W. B. Henderson is president; E. S. Douglas, vice-president and treasurer, and A. C. Wuerpel, secretary. The capital stock is \$50,000

GEORGIA.

Athens—Cotton and Woolen Mill.—Henry Loven, R. K. Reaves, W. D. Griffith and others intend to organize a §35,000 stock company for the manufacture of cotton and woolen fabric Charter has been obtained as the Alpha Mills Co

Atlanta—Marbie Quarries.—J. H. Winder, Hoke Smith, C. A. Collier and H. L. Collier have pur-chased Rock Chapel Mountain in De Kolb county A company is now being formed for active

Augusta Hosiery Mill. New England pa may erect a hosiery mill in Augusta. A Melvin, of Lowell, Mass., is looking for site.

Carrollton.—The Rife's Water Supply Co. has ately been organized with D. L. Trussell, presi-ent; R. Houseworth, treasurer, and J. Y. Bla-

Cordele Lumber Mills. The Southern St. Co., of Birmingham, Ala., will erget lumber

Eastman-Saw and Shingle Mill. -D. M. & W. Bush will rebuild their saw and shingle mill orted in this issue as burned.

Fort Valley-Cotton Gin.-D. H. Houser will rebuild his cotton gin.4

Fort Valley—Saw Mill, W. A. Melvin will at once rebuild his saw mill reported last week as burned. His plant cuts rough and dressed yellow

others, of Stillwater, Minn., have purchased will develop a gold mine near Gainesville. They will build a so-ton separator

Gainesville-Gold-mining Plant.—A large goldmining plant is in course of construction three miles from Gainesville. The company building it declines to have name published as yet. A. M. Cochran furnished us the above.

facture of shoes

West Point-Cotton Mill. The Lanett Cott

West Point—Electric-light Plant and Water Works.—The citizens will vote upon a proposi-tion to issue \$20,000 of bonds for water works and electric-light plant. For information address the mayor.

KENTUCKY.

Covington — Land Company. — The Milldale and Co., reported last week as incorporated, as organized with Ben A. Adams, president; R. H. Gray, vice-president, and Charles S. Furber

Toledo, Ohio, will erect a lumber mill at Irvine

consolide—Brick Works.—Dennis J. Conway, ohn M. Conway and Thomas P. Conway have acceptorated the Conway Brothers Co. for the nanufacture and sale of bricks. Their capital

Mills Co. has recently put considerable new ma chinery in its mill and may add more in the near future. Louisville-Cotton Mill .- The Louisville Cott

Louisville - Machine Shops. - The Kentucky nion Railway Co. will build railroad shops in

Middlesborough-Real Estate.-James T., Wilam R, and Charles M. Fisher have moor the Fishers Agency Co. to deal in real estate, etc The capital stock is \$20,000

Paducah-Saw Mill.-A. B. Lowell is building ew saw mill.

LOUISIANA.

New Orleans—Hosiery Factory.— as started the manufacture of hosie

New Orleans—Lead and Color Works.—The imerican White Lead and Color Works, re-orted in this issue as burned, will be rebuilt at nee with increased facilities at a cost of about

New Orleans-Shoe Company. The Louisi.

Boot & Shoe Co., Limited, has been incorporated with a capital stock of \$10,000 to deal in shoes.

MARYLAND.

erland-Brick Works.-Jas. H. Percy may erect brick works.

Washington, D. C.-Crematory.-The Nation sanitary Co. will build a garbage crematory

MISSISSIPPI.

Jackson-Heading Factory.-V. H. Kirkland has purchased and will operate Vansweimge & Kirkland's heading factory. A new Standard dry-kiln will be put in at once.

Lexington.—The Lexington Gin & Warehoo, has been incorporated with a capital stoc

NORTH CAROLINA.

Charlotte-Mattress Factory.-E. M. Andrews is putting in machinery for the manufacture of

Cleveland Mills—Cotton Mill.—The Cleveland otton Mills have put in additional machinery

Franklinsville—Bag Factory.—The Franklins ille Manufacturing Co. has placed additional archinery in its seamless bag factory.

Greensboro-Broom Factory.-George E. Brodbroom factory

Greensboro-Hosiery Mill. L. F. Ross, Oak Hill Hosiery Mills for the purpose of manufacturing hosiery, etc. The capital stock is

Greensboro-Novelty Works.-J, F. Yates & Co. will erect novelty works

Henrietta Cotton Mill.—The Henrietta Cotto fills contemplate putting in 7,000 additions pindles and 300 looms.

Maiden-Cotton Mill.-The Union Cotton Mill nplates an addition to its mill and 6,00

Maiden-Cotton Mill.-The Providence Cotton Mills are putting in 500 addition

Monbo-Cotton Mill.-The Monbo Plaid Mills will put in new machinery

Monroe—Bridge.—Contract will be let at public auction on October 31 for building a bridge over Bear Skin creek at Austin's Mill, near Monroe. Specifications and further particulars can be obtained of W. F. Morgan.

Mt. Holly-Cotton Mill.—The Mt. Holly Mills ave lately put in new machinery and will make

Mt. Holly-Cotton Mill.-The Nims Manufac-uring Co. has put new engine in its mill.

New Berne-Fertilizer Works,-James Gray, of oston, Mass., will build fertilizer works near New Berne.

Patterson—Cotton and Woolen Mill.—The Pat terson Cotton and Woolen Mills have put in addi-tional machinery lately.

Reidsville—Tobacco Factory.—R. P. Richard-on, Jr., will erect a new tobacco factory.

Reidsville—Tobacco Factory.—A. G. Walters has purchased and will operate the R. P. Richardon tobacco factory

Mills have put in additional machinery lately.

Winston-Tobacco Factory.—The Spirit Cure Tobacco Co., of Louisville, Ky., will erect a leaf factory in Winston.

Winston - Tobacco Manufacturing .- W. S. Clary will establish a tol

SOUTH CAROLINA.

Charleston.—Samuel J. Pregnall, George D. Bryan and William J. Pregnall have incorporated the Charleston Towage & Transportation Co. with a capital stock of \$1,500. K. S. Tupper is president, and W. S. Fairchild, treasurer.

Clover-Cotton Gin.-Smith & Jackson have

TENNESSEE.

Chattanooga—Woodenware Factory.—Clarence Shipp has organized a \$50,000 stock company to erect a factory for the manufacture of refrigera-tors, wooden trays, etc.

Cumberland Gap—Flour Mill.—The \$100,000 company lately reported as organized to erect a lour mill has for its president, secretary and reasurer Henry T. Patton. Address him for

Harriman-Land Company.-David Gib rriman—Land Company.—David Gibson, of rriman; George W. Chandler, of Oncida, and ters have incorporated the Brushy Mountain and Co. for the purpose of founding a city at a foot of Brushy mountain.

Helenwood-Brick Works.-The Lehigh Coal

Knoxville-Car Shops.-The East Tennessee, Virginia & Georgia Railroad Co. will soon commence work on the completion of its new shops.

The car repair shop, cost about \$40,000, will be completed and in operation first.

Knoxville—Iron Bridge.—Knox county will build a 1,200-foot iron bridge over the Holstein river at Knoxville to cost about \$75,000. Dennis Leahy, chairman of committee, can give informa-

Memphis-Chair Factory.-The Magnolia Chair Co., lately incorporated, has organized and elected J. P. Jordan, president; J. R. Noe, vice-president and general manager, and E. Brooks, secretary and treasurer. Contract for buildings has been let, to be completed within two months.

TEXAS.

Bowie-Cottonseed-oil Mill.-W. R. Lamb intends to put in a cottonseed-oil mill.*

Galveston - Creosote Plant. - The Galveston Wharf Co. will at once rebuild its burned creo-

San Antonio. - Sewer-pipe and Pottery Works. Nelson A. Mackey has formed a \$100.

to erect brick, sewer-pipe, tile and pottery works. San Antonio.—The San Antonio Cold Storage & Manufacturing Co. has increased its capital stock

from \$50,000 to \$75,000 St. Jo-Mining and Manufacturing Asphaltum.— The St. Jo Asphaltum Co. has been incorporated to mine and manufacture asphaltum; capital stock

VIRGINIA.

Alexandria - Real Estate. - The Greenville quarium & Park Co. has been incorporated to al in real estate; capital stock \$100,0

Ettricks-Corn Mill.-H. F. Munt will rebuild his corn mill reported last week as burned

Fincastle—Spoke Factory.—Slicer & Slusser have commenced the manufacture of spokes.

Fincastle — Stave Manufacturing, — Th lusser will start the manufacture of staves. - Thom

Norton—Coal Mines and Coke Ovens.—George Allen, of Louisville, Ky., will develop coal nes and build coke ovens near Norton.

Portsmouth.-The Park View Land Co. has been corporated with a capital stock of \$50,

Richmond - Electrical Works, etc. - The Home Electric Co. has been incorporated to manufac-ture electric machinery, light, heat and power; capital stock \$150,000.

amond — Manufacture Seals, etc. — The can Seal Works has been incorporated to acture seals, stamps and stencils; capital stock \$5,000.

Richmond-Commission Com ond Produce Commission Co. has ited with a capital stock of ≸10,000. Richmond,-The Snow-Church Co. has bee

ncorporated to transact a law, collections and the state of the state Roanoke—Carriage Factory.—D. V. Reed will robably rebuild his carriage factory reported in

this issue as burned. Salem-Tannery.-The Salem Tannery Co. is nlarging its tannery.

Staunton-Real Estate.-The Virginia Inter

WEST VIRGINIA.

Harper's Ferry.—A. J. Pickrell, Jr., of Aspen, ol., and others have incorporated the Coles Flue Expander & Beader Co.

Marlinton—Saw Mill.—A company of New York capitalists have purchased 16,000 acres of timber land near Marlinton and will soon erect a saw mill to cut same

Wellsburg—Electric-light Plant.—The Wells-urg Electric Light, Heat & Power Co. will in-rease its capital stock and put a new dynamo in ts electric-light plant

Wheeling — Coffee and Spice Mills. — The Wheeling Coffee & Spice Co., lately reported as incorporated, has been organized with Joseph Speidel as president; Myron Hubbard, vice-president, and John C. Barkley, secretary and treasurer. The company has a capital of \$25,000, and will at once put in coffee and spice mills.

Terra Alta-Furniture Factory.—Isaac C. Smith as purchased the furniture factory and plant of Kolkhoust & Co.

BURNED.

Brambleton, Va.-D. C. Lassiter's lumber mill. Brookhaven, Miss.-Daniel Schwinn's cotton

Conclave, N. C.-Cable & Mason's cotton gin.

2

Dublin, Texas.-Wasson & Miller's cotton gin Eastman, Ga.-D. M. & W. W. Bush's saw and shingle mill

Fairmont, W. Va.—The Barnsville Manufactur-ing Co.'s woolen mill; loss about \$23,000.

Hearne, Texas .- L. W. Carr's cotton gin Macon, Ga.-Whit Carswell's cotton gin.

Macon, Miss.-H. H. Erman's gin.

Madisonville, Tenn.-Hollman & Sons' tobacco

Madisonville, Tenn. - J. H. Lunsford's flour

Midway, S. C.-C. Duensing's cotton gin.

Navasota, Texas.-A. Fiewellen's cotton gin-near Navasota.

New Orleans, La.-The American White Lead and Color Works.

Roanoke, Va.-D, V. Reed's carriage factor Sylmar, Md.-S. L. Denny's skewer and baby

Troy, Ala.-Parker & Belser's saw mill

Wallis Station, Texas.-W. E. Lisles & Bro.'s

Washington, Texas.—The cotton gins of Primus Hawkins and Archie Flewellen.

Waynesboro, N. C .- Rufus Rogers's cotton gin. Wheelock, Texas.-John Cameron's cotton gin.

BUILDING NOTES.

Baltimore, Md.—Building permits have been granted as follows: A. Gottschalk, a four-story brick building; J. S. Magarrity, five three-story brick buildings; J. F. Wiessner, two three-story and one two-story brick buildings; E. S. Hampson, three three-story brick buildings, and John A. Evans, five three-story brick buildings.

Bedford City, Va.—Church.—The Episcopalians will build an §8,000 church, but no plans have as yet been adopted. T. W. Jones can give partic-

Bedford City, Va.—Market-house.—E. G. Buck has been awarded contract at \$5,200 to build the new market-house.

Big Stone Gap, Va.—Hall.—A Masonic hall and usiness block will be built.

Brentsville, Va.—Courthouse and Jail.—The building of a \$15,000 courthouse and jail is con-templated. D. B. Merchant, Manassas, Va., can be addressed.

Chattanooga, Tenn.-Hotel.-The Lookout Inn on Lookout mountain, will be greatly improved.

A new boiler-house will also be built there and a
too horse-power boiler added. David B. Plumer,
manager, can give particulars.

Cherry Run, W. Va.—Hotel, The Western Maryland Railroad Co. toffice, Baltimore) will, it is stated, build a three-story hotel at Cherry Run.

Clarksville, Tenn. - Hotel. -- A \$10,000 hotel will be built at Dunbar's Cave. O. D. Thompson can give particulars

Huntington, W. Va.—Hotel.—Higgs & Calder-wood, of Charleston, have been awarded contract to build the \$75,000 hotel previously reported.

Huntsville, Ala.—Church.—C. F. Bost has been awarded contract for the frame church 30x50 feet to be built in East Huntsville by the Baptists.

Knoxville, Tenn.—Office Building.—The Knox-ville Bar Association, recently chartered, intends ne an office buildi

Lake Charles, La.—Depots.—J. W. Shaw will superintend the construction of twelve depots along the line of the Kansas City, Watkins & Gulf Railroad.

Lillington, N. C.—Courthouse.—Harnett county will probably build a new courthouse with fire-proof vaults to replace the one lately burned. Geo. E. Prince can give particulars when a decision is reached

Little Rock, Ark.—Office Building.—The Mu-tual Life Insurance Co., of New York city, will erect in Little Rock a six-story fire-proof office building 75x150 feet, to have mail chutes, three elevators, electric-light plant, steam heating ap-paratus, etc., and cost about \$300,000. George Tilles, of Little Rock, State agent for the company, has the matter in charge

Llano, Texas—School Building.—J. H. Lo dale has been awarded contract at \$6,157.75 remodeling the Llano public school building.

Mossy Creek, Tenn.—Depot.—The East Tennessee, Virginia & Georgia Railroad (office, Knoxville) will build a depot in Mossy Creek.

Newnan, Ga.-C. F. Meyer, M. Cole and W. Berry contemplate building a brick business

Newport News, Va.—C. M. Braxton has com-inceed the erection of a five-story business milding. Teague & Marye prepared the plans.

Savannah, Ga. - Clubhouse. - The Savannah Wheelmen Club will build a clubhouse and race track at a cost of \$12,000.

St. Augustine, Fla.—Depots, etc.—J. A. Mc-Donald will superintend the erection of a two-story addition to the depot of the Jacksonville, St. Augustine & Indian River Railroad Co.; also a \$9,000 brick roundhouse at St. Augustine and

six new depots along the line of the same com

Suffolk, Va.-School Building.-E. B. Britt will receive proposals for the erection of the two-stor orick school building mentioned in last issue Feague & Marye, of Norfolk, prepared the plans

Washington, D. C.—Kennedy & Davis will erect seven houses to cost \$49,000. Hot-water heating apparatus will be employed. E. S. Kennedy pre-

RAILROAD CONSTRUCTION.

Arcadia, Fla.-Railroad.-Contract has bee for completing the Arcadia, Gulf Coast & Lake land Railroad. George B. Morton, of Boston Mass., has been elected vice-president and gen Mass mager of the road.

Mass., has been elected vice-president and general manager of the road.

Beverly, W. Va.—Railroad.—Messrs. Parsons, Bradley and Baker have returned from a survey for the extension of the West Virginia Central & Pittsburg Railroad from Mingo to the head of Clover creek, in Pocahontas county. Four tunnels are reported as necessary, with a total length of 3,000 feet, the longest being about 1,400 feet.

Bishopville, S. C.—Railroad.—J. M. Hough, of Old Store, S. C., writes that the Lancaster & Chesterfield Railroad project for the present is a dead issue, and efforts are now being made to have the South & North Carolina Railroad extended from Bishopville to Monroe, N. C. This latter road was formerly known as the Bishopville Railroad, but obtained authority from the last legislature to change its name as above and extend its road.

Blue Spring, Fla.—Railroad.—The South Florida

Blue Spring, Fla.—Railroad.—The South Florida tailroad Co. (office, Sanford) is reported as sur-eying a railroad from Blue Spring to High

Buckingham, Va.-Railroad.-C. D. Laugh Buckingham, Va.—Raifroad.—C. D. Langhorne, ontractor for building the 16-mile railroad of the osney Iron & Lumber Co., previously noted, has so miles of track laid and grading under way ong the entire line. It is expected to finish the ad by February 1, 1893.

Carthage, Texas—Railroad.—The Texas Sabi Valley Railway Co. has been chartered by J. Y Mobbetly, R. B. Levy, Jr., R. G. Evans, of Lon view, and others to build a railroad from Carthaj to Center, a distance of thirty miles. The capit stock is \$375,000.

Clanton, Ala.—Railroad.—The Alabama West-ern Railway Co. has been chartered by W. P. and W. H. Jackson, of Salisbury, Md.; H. B. Phillips, of Suffolk, Va.; W. F. Jackson, of Baltimore, and others. The road is to extend from a point at or near Clanton to a point on the Alabama Great Southern Railroad. The capital stock is \$1,000,000.

Southern Railroad. The capital stock is \$1,000,000.

Corpus Christi, Texas—Railroad.—The Corpus Christi & Eagle Pass Railroad Co., lately reported as chartered to build a railroad from Corpus Christi to Eagle Pass, is now making surveys, and it is thought that active work on construction will begin not later than January 1, 1893. The line will run up the Neuces valley, and makes important Mexican connections at Eagle Pass. Eagle Pass.

Dublin, Ga.—Railroad.—A. E. Hachfield, of New York, president of the Oconce & Western Railroad (office, Hawkinsville), writes that con-tract will soon be let for building the road from Rocky Creek to Dublin, a distance of eight and a-half miles, to be completed by January 15, This will make forty-one miles in all operated by

Fincastle, Va.—Railroad.—An engineering corps in charge of Mr. Brown will make a preliminary survey of the route of the Roanoke, Fincastle & Clifton Forge Railroad north from Fincastle to Clifton Forge Railroad north from Fincastle to the Chesapeake & Ohio. The grading of this road between Fincastle and Cloverdale, a dis-tance of 11½ miles, is about finished, and the route between Cloverdale and Roanoke will soon be surveyed. Negotiations are said to be pend-ing for the completion of the entire line from Roanoke to some point on the Chesapeake & Ohio.

Jellico, Tenn.-Railroad.-Grading will so finished on the 71/2-mile railroad being built by the Jellico & Bird-Eye Coal Co.

the Jellico & Bird-Eye Coal Co.

Jonesville, S. C.—Railroad.—Negotiations are
now pending for building at an early date the
Jonesville & Lockhart Shoals Railway, projected
from Jonesville to Lockhart Shoals, a distance of
fifteen miles. C. D. Farrar, of Union, can give particulars.

Macon, Ga.—Tramroad.—H. Stevens's S vill build a tramroad about one mile long.®

will build a tramroad about one mile long.⁸
Owensboro, Ky.—Railroad.—R. R. Hathaway &
Co., contractors on the 16-mile extension of the
Owensboro, Falls of Rough & Green River Railroad to Horse Branch, report that they have
about five miles of road-bed ready for the track
and expect same to be laid by November 1. The
road will be completed early in the spring. They
have commenced work on the terminal at Owensboro, which includes one and a-half miles of
track, yard, etc., and will have same completed
by January 1.

Tallahassee, Fla.—Railroad.—Work will cer-tainly be resumed by December 1 on the Carra-belle, Tallahassee & Georgia Kailroad, and per-

haps before that time. The road is projected to run from Carrabelle via Sopchoppy and Tallahas-see to Thomasville, Ga., a distance of 100 miles.

Tampa, Fla.-Electrical Railroad.-The Cor ad,* ra.—Electrical Kantoad.—The Co se' Electric-Light & Street Railway Co., nerpel, manager, will build an electricad,*

Thurmond, W. Va.—Railroad.—Contracts for Thurmond, W. Va.—Railroad.—Contracts for building the io-mile branch of the Chesapeake & Ohio up Loup creek, lately noted, are let in 2-mile sections to the following: G. G. Gooch, J. C. Carpenter, W. A. Rinehart, Langhorne & Wright and Montague & Tyler. Eggleston & Davis have contract for masonry and bridges. Loup creek joins the Southside branch of the Chesapeake & Ohio on the opposite side of New river from the main line at Thurmond station. The work is to be finished in ninety days.

Wayne County, Miss.—Railroad.—The Chicka-sawhay & Jackson Railroad Co. has been char-tered by Frank S. Robinson, of Moss Point; Ed-ward W. Robinson, of Bucatunna, and others to build a railroad from the west bank of the Chick-asawhay river in Wayne county to the New Oreans & Northwestern Railroad in Jones county

West Point, Ga.—Dummy Line.—W. C. & Lanier contemplate building a dummy line.

MACHINERY WANTED.

If you desire to purchase machinery of any kind consult our advertising columns, and if you cannot find just what you wish, send us particulars as to the kind of machinery needed. We will make your wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. You will thus get all information desired as to prices, etc.

Blower .- B. A. Riesner, Houston, Texas, wants

Boiler and Engine.-The Lownes Manufactur ing Co., Huntsville, Ala., will be in the market for a thirty horse-power engine and boiler.

Boiler and Engine.—Pepper & Brock, Winst N. C., will want boiler and engine next spring Boilers.-H. L. Collier, Atlanta, Ga., will want

Bolt-header and Tapper.—B. A. Riesner, Howen, Texas, wants bolt-header and tapper.

Broom Factory.—George Broderick, Gre oro, N. C., wants prices on machinery outfit room factory.

Cider and Vinegar Machinery.-The Son lce Co., Somerset, Ky., wants an oing artificial cider, vinegar, etc.

Compressor.-H. L. Collier, Atlanta, Ga., will

Cotton Gin.-D. H. Houser, Fort Valley, Ga.

Cotton Mill.—The Alpha Mills Co., Athens Ga., wants a complete outfit for a 2,000-spindl yarn mill. Address R. K. Reaves.

Cotton Mill.—The Capital Manufacturing Co. Columbia, S. C., wants a willow for dusting low

Cotton Mill.—The Lanett Cotton Mill, West Point, Ga., is asking for bids on equipment for a 25,000-spindle and 600-loom cotton mill; L. Lanier,

Cottonseed-oil Mill. — W. R. Lamb, Bowie exas, wants to correspond with manufacturer cottonseed-oil mills.

Distilling Apparatus.—The Gulf Red Cedar Co. V. H. Parrish, president, Greenville, Ala., wants still for extracting oil from saw dust,

Drill Press.—The Palmetto Machine Works, Florence, S. C., want a drill press.

B. A. Riesner, Houston, Texas, w.

Drills.-The Palmetto Machine Works, Flor-nce, S. C., want a set of twist drills. want a set of twist drills Drills .- H. L. Collier, Atlanta, Ga., will want

m drills

Electric-light Plant. — The Hearne Electric Light Co., Hearne, Texas, is now receiving bid on an electric-light plant.

Electric Plant .- The Consumers' Electric-Light & Street Railway Co., A. C. Wuerpel, manage Tampa, Fla., wants machinery for an electri light and power plant to be operated by water

Electrical Railroad.-The Consu Light & Street Railway Co., A. C. Wuerpel, man ager, Tampa, Fla., wants equipment for an elec-trical railroad.

Elevator.-Messrs. Pepper & Brock, Winston N. C., want an elevator at once

Lathes.—The Gulf Red Cedar Co., W. H. Par-sh, president, Greenville, Ala., wants three bucket lathes

Lumber Mill Supplies.—R. F. Rogers, Lake City, Fla., wants live rollers, slab-chain fixtures and best friction feed.

Machine Tools.—J. F. Vates & Co., Greens oro, N. C., will want lathes, drills, emery

Motor.-J. F. Vates & Co., Greensboro, N. C., vill want water motor or small engine.

Planer and Matcher,—D. C. Cole & Co., Vanu-dale, Ark., may want a planer and matcher.

Planer.—The Baltimore Copper Works, Balti-nore, Md., wants a second-hand planer in good rder, 36x36 inches by 7 to 8 feet length of bed.

Pumping System.—The Tunis Lumber Co. Forfolk, Va., is receiving proposals for complete umping system for fire protection. (See adv.)

Rails.-George E. Hoppic, Atlanta, Ga, wants three miles of T rails for a street railway

Railroad Supplies.—The Rice-Born Hardware Co., Limited, New Orleans, La., desires cata-logues and full information, prices, etc., on rail-road supplies and outfits.

-H. L. Collier, Atlanta, Ga., will we miles of 56-pound good second-c

resident, Greenville, Ala., wants)
-pound steel rails and one and on
to 60-pound rails. Rails.—The Gulf Red Cedar Co., W. H. Parrish, resident, Greenville, Ala., wants seven miles of

Rails, etc.-Henry Stevens's Sons, Macon, Ga. prices on new and second-hand s, etc., for about one mile of tramroad.

Rope Machinery.—The Alpha Mills Co., Athens, Ga., wants cotton-rope machinery. Ad-dress R. K. Reaves.

Saws.—Leeds & Marcy, Belington, W. Va., will buy a swing cut-off saw and a band resaw.

Screw Cutter,—B. A. Riesner, Houston, Texas rants screw cutter.

Shaper.—The Palmetto Machine Works, Flor-ence, S. J., want a shaping machine.

Standpipe.— The city of Huntsville, Ala., will want bids for erecting an iron standpipe. Address the mayor

Tools.—B. A. Riesner, Houston, Texas, wa itest improved tools for wagou shops.

Water Works.—The city of De Land, Fla., will eccive sealed bids until December 1 for the con-truction of a portion of a water works system. or further particulars see advertisement.

Woodworking Machinery,—The East Lake In-dustrial Co., East Lake, Ala., wants prices and terms on a four-side planer, matcher and moulder, trimming lathe, band saw, Jig saw, hand planer or jointer, single spindle shaper, dado machine, power mortiser, tenon machine, shaftine care.

Woolen-mill Machinery.—Thomas Lumpkin, Cartersville, Ga., wants to correspond with man-ufacturers of wool-carding machinery.

Geo. A. Stuck, of Rome, Ga., wants to-pond with manufacturers of malleable

Jas. Folmar, Sons & Co., Luverne, Ala., are in ne market for bank fixtures, stationery, blank books, vault doors, etc.

J. F. Vates & Co., Greenshoro, N. C., want rass and steel spring wire, also cardboard.

Mr. A. P. Wiltse, Pocahontas, Va., wants a second-hand steam riding gallery; must be in good condition and cheap.

W. I. Samacla, Bardstown, Ky., desires pla

SOUTHERN FINANCIAL NEWS.

New Banks,

Black Rock, Ark.—The Bank of Black Rock as been chartered with a capital stock of \$ 0.000. Catonsville, Md.-V. E. Bloede, E. J. Farber, ohn Hubner and others have applied for au-hority to organize the Home National I an' of

Houma, La.- The Bank of Houma has increased its capital stock.

Knoxville, Tenn.—The Associated Banking & Trust Co, has been organized and commenced business. W. H. Geers is cashier.

Luverne, Ala.—James Folmar, Sons & C averne, Ala., will establish the bank lat-nentioned at an early date.

Magnolia, Miss.—A bank has been organized and will commence business about November 10.

A. L. Lazar can give particulars.

New Lewisville, Ark.—P. E. McRae and others have organized the Citizens' Bank of New Lewis-

Welch, W. Va.—The Bank of Welch has been chartered by J. H. Bramwell, of Elkhorn; John Cooper, of Coopers; J. A. Welch, of Bramwell, and others. The capital stock is \$50,000.

Baltimore, Md.—The Lake Roland Elevated Railroad Co. has executed a mortgage with the Baltimore Trust & Guarantee Co. as trustee to secure an issue of 1,000 \$1,000 § per cent, gold bonds payable in 1942.

Chattanooga, Tenn.—The Chattanooga Savings Bank has, it is understood, effected arrangements

)

by which the Travelers' Insurance Co., of Hartrplus fund in real estate mortgages in Ten re, Georgia and Alabama.

Llano, Texas.—The city contemplates issuing \$10,000 of school bonds in addition to the \$5,000 of bonds lately mentioned. Fred Opp. mayor, can give particulars.

Louisville, Ky.-The Citizens' ing and Loan Association has declared a semi-annual dividend of 7 per cent.

Mobile, Ala.—The Mobile Transportation Co. ntemplates issuing not more than \$100.000 of

New Orleans, La.—The Sun Homestead & Investment Co. has been chartered by J. C. Beard, J. M. Sherrouse, J. B. Ellis and others.

Shreveport, La.—The Caddo Levee Board will issue \$100,000 of bonds.

Tarboro, N. C.—The Tarboro Cotton Factory has declared a dividend of 8 per cent.

TRADE NOTES.

The Jackson & Woodin Manufacturing Co., of Berwick, Pa., has placed the contract with the Berlin Iron Bridge Co., of East Berlin, Conn., for the new car-wheel foundry. The building will be from the designs of the Berlin Company and made entirely of iron.

F. X. HASER, who is preparing to double the capacity of his Chester City Brewery, at South Chester, Pa., has contracted with C. G. Mayer, of New York, for a 35-ton refrigerating machine which is to embody all of Mr. Mayer's latest pat-

ALL users of appliances requiring detachable chain or chain belting of any style will be inter-ested in the new lines recently brought out by the Jeffrey Maunfacturing Co., of Columbus, Ohio, which are described in the catalogue

The Reliance Gauge Co., of Cleveland, Ohio, had a fine display of goods at the street railway convention in that city last week. This company's specialty is the manufacture of water communs, of which it makes a full line, for which a high reputation has been obtained in the past few

We are advised of a change in the proprietor-ship of the Howard Foundry and Machine Works, of Philadelphia, Pa., the present proprietors being E. A. Blanton, Jr., and S. Norris Craven. This concern is now running its works overtime on elevator work to meet the demand for its improved machinery.

The Mexican Gulf Hotel, of Pass Christian, Miss., has been sold to a Chicago syndicate for \$52,500. The sale was effected through Messrs Robinson & Underwood, real estate men of New Orleans. The purchasers are organizing to take possession immediately, and have under consideration extensive improvements.

The American Screw Co. of Providence, R. L. is making considerable additions to their plant owing to a rapid growth of business. A sochorse-power Corliss cross-compound condensing engine has been ordered to furnish the additional power required. The engine has a 4-foot stroke, with cylinders twenty and thirty-six inches in diameter.

The United States Aerophor Air Moistening & Ventilating Co., of Providence, R. I., have furnished the R. J. Reynolds Tobacco Co.'s factory at Winston, N. C., with their aerophor system. It has been in use some time, and the latter company highly recommends it for reordering hard lumps of tobacco. This is the first time such work has been successfully accomplished.

This visit of an imperial commission from Japan about three years ago to Europe and America to investigate the construction of public buildings has resulted in Baltimore getting an order to place in the new Central Bank of Japan, at Tokio, all the heating and ventilating apparatus. Messrs, Bartlett, Hayward & Co have shipped from New York all the material, boilers, etc., and weighing eighty tons.

The Loomis Manufacturing Co., of Fernandina, Fla., is furnishing "Salasee" plastering three to adamant companies, Fitzgerald Plaster Co., plaster board companies, and to machine-made mortar companies. The fact that mortar made with "Salasee" fibre can be banked for any length of time makes it an excellent binding material for any kind of plastering mortar and stucos work. This fibre is also found valuable in saving lime that is about to air-slake by mixing at once and banking.

Ar a recent meeting of the Radford Pipe & Foundry Co. of Radford, Va., and Anniston, Ala, the following officers were elected. President. J. N. Gamble; vice-president, M. C. Armour; treasurer, Archer Brown; secretary, E. M. Hinchman; general manager, J. K. Dimmick; contracting agent, M. H. Crawford. The company now has an office in Boston, and is acquiring a large trade in the East, having supplied pipe during this year in Boston, Lowell, Fitchburg and West Newton, Mass., Syracuse, N. Y., Philadelphia, Baltimore and numerous other cities.

THE Delbert Engineering Co., Limited, of New Orleans, report having done a splendid business in the past forty days in Magnesia sectional cov-ering, having insulated surfaces for T. J. Shaffer, Anna plantation, Bayou Teche, La.; that of Mrs. Anna plantation, Bayou Teche, La.; that of Mrs. Widow B. Laplace, Laplace station, La., Valley Railroad; Trosclair & Robischaux, Laurel Grove plantation, Bayou Lafourche, La.; J. J. Piedra, Island of Cuba plantation, Houma branch, La.; Daniel Thompson, Calumet plantation, Bayou Teche, La.; F. Damare, St. Elmo plantation, St. James parish, La.; Lafourche Refining Co., Thihodeaux, La.; Libby & Blouin, Bush Grove plantation, Rosseau station, La.; Crescent Farm Plantion, Rosseau station, La.; Crescent Farm Planting Association, Houma branch, La.; Ashton Plantation Co., Limited, Luling, La.; J. S. Tuttle, Laurel Ridge plantation, therville parish, La.; James A. Ware, Bell Grove plantation, Eberville parish, La.; Delgado & Co.'s Albania plantation, A. & G. Damare's Oakley plantation, Ew. Cook's Anchorage plantation, West Baton Rouge, La.; three plantations of R. Milliken's—the Stanton, Hope and Clarkland, Walter A. O'Neil's Limwood plantation, on Bayou Teche, La.; two plantations of C. Lagarde's at Thibodeaux and Lockport, La.; Saffer Bros.' Ardowne plantation on Houma branch, La.; Ernest Rogers's Greenwood plantation, Bayou Lafourche, La.; E. D. Guidry's Cherry Grove plantation at Patonville, La.; W. A. Paton & Sons' Enterprise plantation at Jeannetette, La.; L. S. Clarke's Lagonda plantation in St. Mary's parish; Schwan & Creevey's Alice C plantation at Franklin, La.; Chas, A. Claudet's Donglas' Sweet Home plantation on Bayou Lafourche: Traban & Daigle's Aloysia plantation in Berville parish; Jno. T. Badeau's Valentine plantation at Lockport, Bourdier & Bellissen's Waveland plantation at Paterson, La.; L. Pugh's Maidwood plantation at Paterson, La, L. Pugh's Maidwood plantation at Paterson, La; L. Pugh's Maidwood plantation at Pater Widow B. Laplace, Laplace station, La., Valley Railroad; Trosclair & Robischaux, Laurel Grove

TRADE LITERATURE.

This new catalogue of the S. A. Woods Machine The new catalogue of the S. A. Woods Machine Co., of Boston, Mass., is an exceptionally fine piece of work, both in its plan and the execution thereof. The engravings are skillfully made, the text is concise and the entire catalogue is such as affords pleasure to a busy man who knows what he wants and desires to find it quickly. The line of woodworking machinery manufactured by this company is so widely known that we need say nothing of what is shown in the catalogue. The machines week for themselves. achines speak for themselves

THE Colburn Electric Manufacturing Co., of Fitchburg, Mass., has sent out a neat little cata-logue giving a general idea of the construction and appearance of the dynamos and motors built and appearance of the dynamos and motors built by this company. The descriptions are brief but comprehensive, and anyone interested in this line will find them interesting. A number of illustrations are given showing the motors and dynamos. The front page of the catalogue is a piece of neatly-designed and well-executed em-bossed work.

We have received from F. R. Chinnock, selling agent of the Ball Engine Co. in New York city, an interesting little pamphlet entitled "Electric Lights on a Coral Reef," and giving an entertaining description of the difficulties encountered in constructing an electric-light plant at Key West, Fla. This plant consists of one so-light arc dynamo, one 650 and one 1,500 incandescent dynamo turnished by the Thomson-Houston Electric Co. The steam plant is three Ball condensing tandem compound engines, with heaters, condensers, pumps and boilers. The plant commenced operations nearly a year ago, and has proven highly satisfactory.

H. N. Bates & Co., of Boston, Mass., have sent out a neat catalogue and price-list of pulleys, shafting, bangers, couplers, etc., of which they manufacture an extensive line. The friction clutches and pulleys made by this firm are well-known, and the Hunter clutch described in the catalogue presents many advantages which users of this class of goods will do well to examine into. The dimensions and price of all goods are given in detail, so that the purchaser can estimate exactly the cost of his goods, thus avoiding the uncertainty in purchasing by the pound. exactly the cost of his goods, thus avoi uncertainty in purchasing by the pound.

Launch of El Rio.

NEWPORT NEWS, October 26.

A brighter and more auspicious day could not have been desired for the launching of a steamship, and a more select and numerous assemblage has seldom gathered together than on the occasion of the launch of El Rio at Newport News to-day, As previously announced, no invitations were issued and no banquet was given, but nevertheless the event was witnessed by many prominent people from other cities. Superintendent Smith and his assistants were on hand early in the day, and every precaution was taken and a thorough inspection of the ways was made, when everything was pronounced in readiness for the gliding away of the third of the big ships built at Newport News. Early in the day trains and steamers began to arrive with excursionists from different points to witness the launch. At I P. M. everything was pronounced in readiness, and in a few moments afterwards the principal officials and invited guests took position near the bow on a stand prepared for the occasion. At 1.15 P. M. Miss Loulie Braxton stepped forward, and as the vessel glided into the water the traditional bottle of wine was broken on her bow, the young lady christening her El Rio. The launch was a success in every respect, and of the many naval experts present all were agreed that the ship was one of the finest of her class. It is said that the ways in the ship-yard will be lengthened; two large shipways are now being constructed which will be 575 feet long and will be so con-structed that they can be lengthened to accommodate vessels 650 feet long and of 70 feet beam.

REAL estate men in Knoxville, Tenn., state that values in both city and suburban property are holding firm, with a tendency to advance. The volume of sales has increased somewhat during the past month, and the outlook for good business during the fall and winter is excellent.

OPPORTUNITIES FOR INVESTMENT

We shall be pleased to answer communications and give information concerning the following opportunities for investment. Address all correspondence to the MANUFACTURERS' RECORD, Baltimore, Md., and be particular to give the number of the advertisement to which you refer. refer.

No. 1-STREET RAILWAY,—The owners of a valuable street railway franchise in Texas, extending through the thickly-settled portion of a large city and into the suburbs, desires to place the securities of the company or to negotiate a loan to be used in the construction of the road. The cost of building the line is estimated at \$60,000, and it is calculated to yield a gross annual revenue of \$10,000.

No. 2—COTTON MILL.—A part owner in a Southern cotton mill which has been in successful operation for a number of years, desires to obtain money for the purchase of the other interests in the property. Ample security will be given for a loan of \$10,000.

No. 3-IRON FOUNDRY.—An iron foundry engaged in the manufacture of a specialty for which there is a ready sale, has demand for twice its present output. The company desires to increase its capital to the extent of \$10,000 for the purpose of doubling the capacity of its plant.

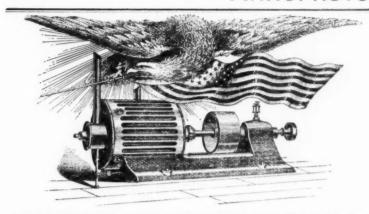
No. 4 – HOTEL.—A hotel in a prosperous Southern city, which cost \$50,000, can be purchased for \$15,000, including all furniture and fixtures and about seventy-five lots adjoining, 25 by 150 feet. House is new and in good condition. Connects with business part of the city by granolithic sidewalks, and electric cars pass the hotel every five or ten minutes. Reasonable terms will be made with a responsible purchaser.

through valuable helds of canner and cowing con-late examine all goods are miles it traverses valuable timber lands contain-ing oak, walnut, therry, poplar and other woods avoiding the and.

There is a rich oil field on the route, and for 100 miles it traverses valuable timber lands contain-ing oak, walnut, therry, poplar and other woods and.

TABLE OF CONTENTS.

		age.
y.	Virginia's Building at the World's Fair (Illus,	
	The Oyster Industry of Norfolk, Va	
-	Savannah: The Commercial Ocean Gateway Between the South and North and West	
200	The Construction of Stone Roads (Illus.)	
	Country Roads in Virginia	
· ·	In Southwestern Louisiana: The Town of	
0	Washington Increased Property Values in Georgia	
	PHOSPHATES:	
	Geology of Alabama Phosphates and Marls	252
	Florida Soft Phosphate	252
	Sale of the Pharr Phosphate Co	
	Phosphate Matters in Anthony	
	Phosphate and Fertilizer Notes	
	Error in Analytical D term nations of filicon	
	in Pig Iron	
	TEXTILES:	
	Development of Cotton Manufacture. I	
	An Easy Way to Build Cotton Factories	
	The Lanett Cotton Mill	
	RAILROAD NEWS:	2014
	West Virginia Central in Pocahontas County	255
	The Paducah, Tennessee & Alabama	255
	A Valuable Railroad Link	255
	San Autonio & Aransas Pass	255
	Southern Railroad Notes	255
	EDITORIAL:	
	Errors in Silicon Determinations	256
	Misrule in Texas	
	CORRESPONDENCE:	
	The Foundations of Prosperity	257
	Oil and Natural Gas in Arkansas	257
	A Bright Outlook in Roanoke	257
	Birmingham as a Cotton Manufacturing Centre	257
	Result of Five Years of Experience	
	A New Steamship Line for New Orleans	257
	MECHANICAL:	
	Notes on Machine Shop Practice	258
	Gem Steel Wind-Mill (Illus.)	258
	A New Screw Pitch Gauge (Illus)	258
	Diamond Machine Co.'s Grinding Lathe	258
	(Illustrated)	259
	The Palmetto and Its Products	259
	COAL AND COKE:	
	West Virginia Coal Developmen	260
	The Mine Manager	260
	Cumberland Coal Shipments	260
	LUMBER:	4
	Lumber Business in the South	261
	The Rich Stave Machine (Illus.)	261
	Fast-Feed Hardwood Flooring Machine	
	(Illustrated)	261
	Southern Lumber Notes	262
	Lumber Market Reviews:	
	New York	263
	Baltimore	263
	Norfolk	263
	Charleston	203
	Savannah Brunswick	-63
	Mobile	263 264
	Memphis	26.1
	Beaumont	264
	Business Conditions in the South	264
	IRON MAPRIETS:	
	Philadelphia	264
	Pittsburg	154
	Wheeling	265
		205
	St. Louis	265
	Louisville	265
		265 265
	Construction Impartment:	
		200
	Building Notes	267
	Machinery Wanted	267
		267
	Trade Literature	268
	Launch of El Rio Opportunities for Investment	208



AMERICAN HIGH SPEED ENGINE.

This Engine revolutionizes the manner of applying steam in generating power. It can be regulated so as to run at any speed desired, up to

1000 OR MORE REVOLUTIONS PER MINUTE !

It is not a rotary Engine, yet the motion of its parts is such that there are no "dead centers." It takes steam and exhausts four times at each revolution. For

SPEED, SIMPLICITY AND ECONOMY,

this Engine has no equal. It possesses many striking advantages over all other Engin ither slow speed or so-called high speed. Its speed is closely regulated by a sensitive and reliable automatic governor. Built of any required size,

FOR ALL STATIONARY AND MARINE PURPOSES.

It can be coupled directly to dynamos, fans, blowers, fire engine and other rotary pumps; in fact, to any machine requiring great velocity. It is smooth running and noiseless. Being light and compactly built, it takes up less room than any other Engine of equal power. No heavy foundations are required. This Engine is

THE ACME OF SIMPLICITY.

No skilled engineer is required.

For further particulars and Illustrated Catalogue, call upon, or address,

AMERICAN ENGINE COMPANY,

BOUND BROOK, N. J.

JOHN L. WILLIAMS & SON.

BANKERS.

Our Manual of Investments for 1890, the larger work of the kind published by any banking hous in America, (406 pages, octavo, cloth.) may be haw without charge by clients, correspondents anthous expecting to do business with us; by other at \$2 per copy.

von HEMERT & CO.

Bond and Stock Brokers,

30 Campbell St., S. W., ROANOKE, VA.

INVESTMENTS IN THE SOUTH.

Exchange Banking & Trust Co.

CHARLESTON, S. C.

Paid up Capital, \$100,000. Authorized Capital, \$1,000,000

Paid up Capital, \$100,000. Authorized Capital, \$1,000,000. Transacts a General Bunking and Trust Business. Savings Department. Interest Allowed on Deposits.

Investments made (at usual rate of commission) in safe and reliable interest paying Southern securities, and 1st mortgage loans on improved city and town real estate. Correspo dence solicited as to all Southern investments. Being within easy reach of all parts of the South, thorough and careful investigation can be made of intended investments or purchases.

Officers: Geo. B. Edwards, president; P. N. Pickens, cashier; R. E. Muckenfuss, secretary and treasurer; J. Lamb Perry, so icitor; Smythe & Lee, general coursel.

DIRECTORS:

DIRECTORS:

A S. J. PRRRY, of Johnston, Crews & Co, whole sale dry goods.

sale dry goods.

WILLIAM M. Bird & Co., whole-sale paints and oils.

JAMES ALLAN. of James Allan & Co. jewelers.

I. H. F. Koenig, with Knoop, Pretichs & Co., cotton exporters.

CEO. B. Edwards, Prest. Elec. Lt. & Power Co.

50 PER CENT. PROFIT.

T. H. SAMPSON.

PARTIES DESIRING TO INVEST in a good, solid and paying enterprise, will be placed on track of such if they will write to 'A W. Z." CHARLESTON,

SOUTH CAROLINA.

NEW ORLEANS, LA.

SOUTHERN BANKS.

Be'ow is published a list of Banks and Bankers in the Southern States, whom the Manu turers' Record commends to its readers:

GEORGIA.

GEORGIA.

AUGUSTA—Georgia Hattroad & Banking Co., Chas. H. Phinizy, President. Capi al \$4,200,000.

MACON—American National Bank Wm. H. Burden, President Capital \$250,000.

MACON—Exchange Bank, H. J. Lamar, President; J. W. Caban ss, Cashier. Capital and surplus \$550,000.

MACON-First National Bank, J. C. Plant, President. Capital and surplus \$260,000.

SOUTH CAROLINA.

COLUMBIA—Carolina Nati nai Bank,
W. A. Clark, President. Capital \$100,000.

VIRGINIA.

BUENA VISTA — Buena Vin'n Long & Trust Co.. C. B. Guyer. Pres. Capital \$100.000.

C. O. Godfrey.

A. W. Tra'n

GODFREY & TRAIN.

Investment Securities, Stocks, Bonds, Etc.

\$500,000 Good City and County Bonds Wanted

40 Wall Street, NEW YORK.

Southern Envestments.

EDWARD MORTON & CO. Investment Securities,

53 Broadway,

NEW YORK.

Railroad Finance a Specialty. Stocks, Bonds and Loans. Construction Material and Equipment. Street Railroads.

Municipal Bonds and Industrials.

WANTED-TO'LOCATE AND SECURE EMPLOYMENT FOR ALL HONEST AND INDUSTRIOUS PEOPLE WHO WANT TO COME SOUTH. WRITE FOR PARTICULARS. MCCLURE & MAXWELL. REAL ESTATE & MINERAL LANDS, KNOXVILLE, IENNESSEE.

HELP WANTED.

WANTED — Salesmen visiting Saw Mills, Flour Mills and Factories to sell (side live) staple article in great demand Pays \$50 to 5000 per mouth. ROYAL MFG. CO., 90 Nassau Street, New York.

SITUATIONS WANTED.

WANTED-Position as STENOGRAPHER or Assistant Bookkeeper; experienced At references. Address "BOOKKEEPER," Box 74. Ypsilanti, Mich.

VANTED-Position by a Practical SPOKE-MAN as Foreman, Years of experience and all departments. Address "M. C. B.," care of MANUFACTURERS' RECORD.

WANTED - Situation in the South or West by a first-class STENOGKAPHER, also experienced in bookkeeping and general effice work. Age 27. Can furnish At credentials from present and past employers. Address WALTER P. NORRIS, care the Proctor Coal Co., Jellico, Tenn.

Tenn, N1:

WANTED-Pesition by a Practical Genera
PLANING MILL MAN with twenty yearexperience. A good Draughtsman; can take of
work and lay out same: an expert Machine
stand and experienced Foreman; understands
carpentry and machinery repairs, etc.; willing to
t ke a position in any espacity where mirrited
advancement is possible; good references, or a
toractical trial given; South preferred. Address
"HUSTLER," care MANUFACTURERS' RECORD, 4

WANTED—Position by a Practical Builder as FOREMAN or SUPERINTENDENT OF CONSTRUCTIONS. Satisfactory references given. Address BOX 513, Huntington, W. Va. O28

WANTED-A Situation as Superintendent of Saw and Planing Mill by a man thoroughly competent. Good reference. Address "H," care MANUFACTURKES' RECOPD ON

MANUFACTURERS' RECOPD OS

WANTED-A Stuation as Superin endent to
Foreman of a Malleable Iron Plant; can
construct same. Have had twenty-five years'
xordience in the business. Address' MALLEA
BLEIRON," care MANUFACTURERS' KROORD OSS

WANTED - FOUNDRYMEN TO GIVE AL-UMINUM ALLOY COMPOSITE a TRIAL. I wo per cent. in ordinary (upola will give you soft, sound and solid semi-wrought iron castings Price \$5.00 per 100 pounds f 0.5. Book of information, with Government report and other indisputable testimonials for foundry-

men free. The Hartspeld Furnace & Refining Co. Newport, Kentucky

WANTED.

FOREMAN in Woodworking Establishment

who thoroughly understands his business, and can take a third or half interest. Apply to

IRWIN TUCKER,

NEWPORT NEWS, VA

THE NATIONAL CORDAGE CO. NEW YORK, October 7,
The Board of Directors of this Common
this day declared the regular quarterly div
of TWO PER CENT. on the Preterre
THREE PER CENT. on the Common St

pany, 135 Front St., this city. The transfer boo will close Oct. 15 at 12 M., and reopen Novert at 10 A. M. CHARLES DAVIS, Treas.

NORFOLK & WESTERN RAILROAD CO.

PAILADELPHIA. September 28, 18
Notice is hereby given, that the Board of D
ors has declared on the preferred stock of
company a dividend of one dollar per al M

Important to All Corporations.

Every Incorporated Company should USE KAUFFMAN'S Copyrighted Forms of Improved Record Book, Transfer Book, Stock Register, Stock Ledger and other valuable Books. Write for Descriptive Circular. Address

CORPORATION BOOK CO.

The Southern Information Bureau

It Undertakes to Explain, from personal fa-miliarity with the country, the opportunities the South has to offer to those in the North who are fashioning into wares and fabrics the natural products of Southern fields and mountains; and, is fact, to provide, through its Southern and its Northern Branches, a medium by which the inquirer and his object may be brought into communication. Write us.

541 EXCHANGE BUILDING,

BOSTON, MASS.

SOLICITORS OF PATENTS.

For the convenience of a large number of readers of the MANUFACTURERS' RECORD who require the services of reliable Paten' Attorneys, the appended directory is given. Those of our readers who may correspond with the A torneys here mentioned, will confer a favor upon both selverturer and publisher by mentioning the MANUFACTURERS' RECORD.

PATENTS FOR INVENTORS.

40 PAGE BOOK FREE.

Address W. T. FITZ GERALD, Attorney-atLaw, Washington, D. C.

GLASCOCK & CO., Washington, D. C.

GEORGE E. LEMON, Washington, D. C.

DATRICK O'FARRELL, Solicitor of Pat-ents, Inventors Guide sent free, Wash, D.C. S. Patent Office, 615 7th St., N.W. Advice free.

GEO. P. WHITTLESEY, Patent Lawyer and Solicitor of Patents, Washington, D. C. DU BOIS & DU BOIS, Wash., D. C. Terms unsurpassed. Send for illustrated hand book.

K NIGHT BROS.—Patents for Electrical and Mechanical Inventions. 631-633 F Street, Washington, D C. Established 1843.

PATENTS OBTAINED - OUR for our "SHORT TALK ON PATENTS." WAL-TER DONALDSON & CO., Washington, D. C.

\$40,000,000

ed by the Bell Telephone Patent in 1891. invention may be variable. You should ct it by patent. Address for full and intelli-

W. W. DUDLEY & CO.

Pacific B d'g, 622 F St., N.W., WASHINGTON, E

CATENTS VALIDITY and INFRINGEMENT SEARCHES A SPECIALTY DODGE & SONS

WASHINGTON, D. C.

ATENTS

CHAMPION & CHAMPION,

ences conducted, etc. Specialties - INTFRFER FNCES AND METALLUKGICAL INVEN-TIONS. Correspondence invited

Pacific Building, Washington, D. C.

FULTON COLVILLE.

ATTORNEY AND COUNSELLOR AT LAW.

Gate City Bank Building, ATLANTA, GA.

Special attention given Collections, Commercial and Corporation Law Attorney for Lorry Banking Co., Atlanta, and Manufacturers' Record, Baltimore.

C. J. HADEN. ATTORNEY AT LAW, ATLANTA, CA.

Southern Timber Lands.



DESKS, CHAIRS, Office Furniture.

DERBY & KILMER DESK CO

M. Sander & Co. and Carles Charles Chich Of St.

ARCHITECTURAL FOUNDRIES

shing to manufacture upon a royalty D
's system of ANCHOR PLATES and
Prsts for Self-Releasing Beams in builsitu tion or purchase State right. It
cloo and bearing blate combined, requirtiting of bricks. Address

P. DUVINAGE & CO.
on Street, BROUKLYN, N. Y

The BOOMER & BOSCHERT PRESS KNUCKLE JOINT

FOR BALING BUGMER & BUSCHERT PRESS CO. 329 W. Water St. Stratuse, N. V.

PROPOSALS.

PROPOSALS will be received at office in Nor-folk for complete pumping system for fire protection. 3,000 to 4,000 ft. 6-in., 8-in., 10-in. and 12-in. Cast Iron Pipe; 2 pair Duplex Pumps, Hydrants, Valves, Hose, etc. Information may be had at the mills in Norfolk. The TUNIS LUMBER COMPANY, Norfolk, Va.

LUMBER COMPANY, Norfolk, Va.

DIDS FOR WATER WORKS.

SEALED BIDS will be received by the City Clerk of the City of DeLand Fla, until Thursday, December 1, 1892, at 7 30 oclock P. M., for the erection of a portion of a System of Water Works in said city as per specifications on file in the office of the City Clerk. Bidders must be prepared to execute good and sufficient bonds in twice the amount of their bids for the faithful performance of their contract. The right is reserved to reject any or all bids.

By order of the City Council. L. E. SPENCER, Chairman Fire and Water Commission, DeLand, Florida.

Chairman Fire and Water Commission, De Land, Florida.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., October 2, 1892. SEALED PROPOSALS will be received at this office until 2 o'clock P. M. on the 16th day of November, 1802, and opened immediately thereafter, for all the labor and material required for the Excavation, Foundations, Stone and B. is Work, Floor and Roof Construction, Roof Covering, etc., for the U. S. Custom House and Postoffice Building at St. Albans, Vermont, in accordance with the drawings and specification, copies of which may be had on apilication at this office or the office of the Superintendent at St. Albans, Vermont. Each bid must be accompanied by a certified check for a sum not less than 28 of the amount of the proposal. The right is reserved to reject any or all bids and to waive any defect or informality in any bid if it be deemed in the interest of the Government to do so. All propos ds received after the time stated will be returned to the bidders, Proposals must be enclosed in enviciopes, scaled and marked "Proposal for the Excavation, Foundations Stone and Postoffhe Building at St. Albans Vermont, and addressed to W. J. EDBROOKE, Supervising Arch tect.

TREASURY DEPARTMENT, Office Super-

office Building at York, Pa., "and addressed to W. I. EDBROOKE Supervising Architect.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., October 14. 1892. SEALED PROPOSALS will be received at this office until 2 o'clock P. M. on the 16th day of November, 1893, and opened immediately thereafter, for all the labor and materials and erec ing complete, one Hydraulic Passenger Elevator and one Steam Freight Elevator in the U. S. Old Custom-House (Appraisers' Stores) Building at St. Louis, Mo., In accordance with the diawings and specification, copies of which may be had on application at this office or the office of the Custodian at St. Louis, Mo. Each bid must be accompanied by a certified che-k for a sum not less than 2 per cent, of the amount of the proposal. The right is reserved to reject any and all bids, or to waive any defect or informality in any bid, if it be deemed in the interest of the Gevernment to do so. All proposals received after the time stated will be returned to the bidders. Proposals must be enclosed in eavelopes, scaled and marked "Pronosal for one Hydraulic Passenger Elevator and one Steam Freight Elevator in the U. S. Old Custom-House (Appraisers' Stores) Ruilding at St. Louis, Mo., "and addressed to U. S. Old Custom-House (Appraisers' Stores) Ruilding at St. Louis, Mo.," and addressed to U. S. Old Custom-House Appraisers' Stores) Ruilding at St. Louis, Mo.," and addressed to U. S. Old Custom-House Appraisers' Stores) Ruilding at St. Louis, Mo.," and addressed to the proposal content of the Comment of

PHOSPHATE LANDS FOR SALE.

1,200 Acres of the Famous Peace River Valley Lands,

with eighteen miles of river running through the tract. Also i.Soo acres of high-grade land pebb e from one half to two miles of radroad. Also to tet on royality, tee acres and 320 acres of land pebble, both near transportation.

For particulars as to either of the above apply to tation. er of the above apply to

A. A. SCOTT.

LAKELAND, FLA.

W. J. WILLIAMS.

General Agent for Supplies used in the Con struction and Operation of

Water Works, Electric Plants, Machine Shops MILLS and STEAM USERS.

Office, No. 202 N. Texas Bank Building, DALLAS, TEXAS

H. H. McGREW, Middles' orough, Ky. LUVS AND SELLS

Hardwood Timber Lands

BLACK WALNUT LUMBER AND LOGS CEDAR POLES AND RAILROAD TIES.

12-Inch Pipes

FOR SALE CHEAP,

Wrought Iron Flanged Pipes. New Lendon, Stanly County, North Carolina

For Sale at Very Low Prices.

Boiler Feeders, 2½ in. steam and 2 in. water side. Steam Jet Ventilator, Korting, 11 in. inlet. Condenser and Pump, Hamilton, 10 in. steam side, 14 in. water side, 12 in. stroke. Suitable for any engine up to 200 horse-power. Bulkley Injector Condenser for 200 horse-power. Trip-Hammer, helve, 30 pounds. Trip-Hammer, busice dead stroke, 40 pounds. Planer, cigar box, 8 in. Exhaust F. n., 12 in. outlet, 10 in. inlet. Exhaust F. n., 12 in. outlet, 10 in. inlet. Exhaust F. n., 5 urtevant Monogram No. 5. 8 Spindle Drill for Butt Hinges. Double Milling Machine for Butt Hinges. Slide Lathe, chain feed, 6 ft. by 18 in., cheap. Weymouth Lathe, for turning irregular forms. Nut Taprer, 5 spindle, very cheap. Separating Fan, Wordruff's patent, for saving shot from the capola pump. Tumbler, ventilating, for wire nails, &c. Nut Tapper, 4 spindle, 2 right and two left, for axle and wagon skein nuts.

Patterns and Machinery for a line of Builders, Cabinet Makert.* Biological in side of the first of the standard of the Hard.

Patterns and Machinery for a line of Buildere, Cabinet Makers', Blacksmith and other Hard-ware and Implements.

H. J. PEARSON.

CINCINNATI, OHIO

If You Want to Know

Anything about the South, about its resources, the progress of its development, the establishment and growth of new enterprises, you can find it all in the MANU-FACTURERS' RECORD, and only there. There is no other medium that will keep you so well posted about anything that pertains to the South.

The MANUFACTURERS' RECORD is published weekly, and will be mailed to you one year for Four dollars, six months for Two dollars, or three months for One dollar. Sample copies free.

BALTIMORE, MD.

DESIRABLE CARDS FOR SALE.

fast combs, excelent clothing and condition.

May be seen at Richmond, Va.

Two 40-linch two-beater English Loppers, in best condition, at Trey, N. Y.

Full details and prices on application.

G. W. ARNOLD, 552 Fulton Street TROY, N. Y

PUMPS, ENCINES AND MACHINERY. I No. 6 Centrifugal, with engine attached ... \$300 I No. 12 ... \$60 I No. 13 ... \$60 I No. 12 ... \$60 I No. 12 ... \$60 I No. 12 ... \$60 I No. 13 ... \$60 I No. 13 ... \$60 I No. 13 ... \$60 I No. 14 ... \$60 I No. 14 ... \$60 I No. 15 ... \$60 I No.

FOR SALE.

Strictly First-Class Second-Hand Bollers 50 to 100 Hors -Power,

Fittings to suit purchasers. Engines, Pumps and general machinery in stock at low prices. Every article overhauled in our own shops. No risk in buying such second-hand machinery.

CHESTER BERTOLETTE & CO.

NORRISTOWN, PA.

For Sale Cheap.

RAILROAD CONTRACTOR'S OUTFIT.

2 12-ton Locomotives, 3-feet gauge. 18 Dump Cars, 3 cubic yards capacity, 3 ft gauge. 18 pairs Extra Carwheels, 20 in diam., 3-ft gauge. 10 Otis Steam Shovel, cap. of dipper 1½ cub. 3 ds. Any or all of the said outfit will be sold very leap. For further information, prices, &c.,

JOHN HOLMES,

MIDDLESBOROUGH, KY.

KNITTING MILL

FOR SALE OR LEASE.

The PITTSBORO (N.C.) KNITTING MILL is offered for sale or lease at A GREAT BAR-GAIN. Building and Machinery new and in good condition. Daily capacity of sixty dozen good condition. Daily c pairs of socks. Address

"KNITTING MILL,"

Pit sboro, N. C.

A GOOD CHANCE FOR INVESTMENT.

FOR SALE PRIVATELY.

Danville Iron & Machine Works.

An established business—FOUNDRY AND MACHINE SHOPS—only one other plant with it a radius of fifty in les. All machinery now in ACHINE SHOPS—only one other plant with radius of fifty m les. All machinery now tual operation. All necessary machiner los, patterns and material on hand in goundtion. Danville and North Danville togeth we about 16,000 inhabitants. I will sell thole plant, including the real estate, at show if per cent. discount of actual cost. Term

A. T. BURR, Jr., Trustee, DANVILLE, VA.

4

\$5,000

WILL BUY

The Best Plant

FOR

ANY KIND OF MANUFACTURING.

It is located in GALLATIN, TENN. on the Louisville and Nashville Railroad, near the great lumber section of the State, and includes

- 3-story brick building nearly new, 50x150 feet.
- 5 acres of ground.
- Greenwold Engine, 150 H. P.
- 3 Boilers, 60 H. P. each.
- 2 Iron Tanks.

R. M. FOSTER,

CALLATIN, TENN.

FOR SALE-Second Hand TIGHT WORK Stave, Heading and Barrel Machinery. CRESCENT MFG. Co., 136 River St., Cleveland, O.

Steel Saw Mills

Steel Head Blocks

Steel Set Works

Steel Set Shaft

Steel "Out & Out"

Being compact run easi last longer, being simple COST LESS
MONEY than any Saw Mill in the

Manly Machine Co., FOUNDERS DALTON, GA.

FOR SALE.

The Whole or a Part Interest in a Furniture Factory & Planing Mill

All Machinery and House new. Facto y doing good paying business. For particulars address

M. F. WHARTON.

HARD WOOD We have

HUNDLEY BROS. & CO..

FOR SALE.

One Thousand Acres Cannel Coal Lands For Sale in Kanawha County, W. Va.

A'CESSIBLE TO RAILWAY, so Bituminous Cosl and Tumber I ands Fo Prices Moderate. Address

es Moderate. Address
JOHN S. HOCUE,
West Virginia.

FOR SALE.

SAW MILL

IN VIRGINIA, on line of A. & D. R. R. with FIVE MILLION FEET of standing Yellow Pine. Everything complete and in running order, with edger and cut-off saw attached. Capicity, TWENTY THOUSAND FEET PER DAY. Price, \$6,000.00. \$50000 cash, but to suit purchaser. Address

R. F. MOSS, Booker, Va.

FOR SALE-A WELL EQUIPPED SASH, DOOR, BLIND AND PLANING MILL, IN FIRST-CLASS ORDER, AND LOCATED IN ONE OF THE FLOURISHING TOWNS
OF NORTH CAROLINA POPULATION NO OPPOSITION. GOOD ABOUT 4,000. NO OPPOSITION. GOOD SHIPPING FACILITIES HEALTH OF THE COMMUNITY UNSURPASSED IN THE SOUTH. FOR FURTHER PARTICULARS ADDRESS "PLANING MILL."

CARE MANUFACTURERS' RECORD.

WEALTH.

RID Phosphate, Timber, 0

Sugar U

H

For Sale in large tracts Write to SOLON B TURMAN,

ELIGIBLE LOCATION FOR COTTON FAC-TORY, having advantage of river and railroad transportation, in fine cotton producing region, in state of Mississippi. Also, near railroad in same State, ELIGIBLE LOCATION FOR AXE-HANDLE FACTORY. Both for sale at moderate prices. Address

PERRY NUGENT,

GREENVILLE, MISS.

RARE CHANCE. **Machine Shop**

(49) forty-nine SECOND-HAND Machine Tools, in Excellent Condition.

FOR SALE

SINGLY.

FITCHBURG) BLAISDELL

Makes.

COMPRISING

LATHES, DRILLS, SHAPERS, PLANERS.

N. B.-Seven of these Tools were sold last week, order promptly or REPENT.

ADDRESS

PENNSYLVANIA MACHINE CO., LIMITED.

31 N. Seventh Street, Philadelphia, Pa.

Corliss Automatic Engines

Electric Light, High-Speed and Silde Valve Engines.

In first-class condition for immediate delivery at very low prices.

Special Corliss Rolling Mill Engines for Plate Mils, etc., 30x72 in., with 30 ton whrel 16-11, wrought shaft; also 24x48 in., with 18 ton whe d., 12-in. wrought shaft.

Corliss Engines, one etc., 30x60, 22x48, 26x48.

wrought shaft; also 24x88 in, with is ton whe .1, 124.0, wrought shaft.

Corliss Engines, one each, 30x60, 32x85, 26x45, 23x36, 20x45, 18x86 in 16x42, 14x45, 11x26. Buckeye Engines, one each 11x20, 11x21, 14x24, 15x16, 12x24, 15x16, 12x24, 12x16, 12x16,

GEO. M. CLAPP, Agent,

MACHINERY IN STOCK.

MACHINERY IN STOCK.

ENGINE LATHES.—62 inches x 22 feet; 88 in. x 3t ft.; 50 in. x 20 ft.; 48 in. x 15 ft.; 42 in. x 12 ft.; 32 in. x 12 ft.; 29 in. x 15 ft.; 42 in. x 20 ft.; 1 each 24 x 10 ft.; 12 ft. and 16 ft.; 1 each 17 in. x 20 ft.; 1 each 24 x 10 ft.; 12 ft. and 16 ft.; 1 each 17 in. x 26 in. x 15 ft.; 2 each 17 in. x 6 and 8 ft.; 1 each 16 in. x 6, 8 and 10 ft.; 1 each 12 in. x 5 ft.; 12 each 11 in. x 4 and 5 ft.; 2 each 11 in. x 4 and 5 ft.; 2 each 11 in. x 4 and 5 ft.; 2 each 12 in. x 5 ft. x 4 in. x 5 ft. Fox Monitor Lathes; 1 15 in. x 6 ft. Square Arbor Fox Lathe; 1 each 12 in. x 5 ft. x 4 in. x 5 ft. x 4 in. x 5 ft. x 6 in. x 5 ft. x 6 in. x 6 in. x 6 ft. x 15 in. x 6 ft. x 10 in. x 6 in. x 10 in. x

PRENTISS TOOL & SUPPLY CO. 59 S. Canal St., Chicago. 115 S. Liberty St., N.Y

BARGAINS.—SECOND-HAND TOOLS.
We have the following second-hand Machine Tools, taken mainly in exchange for those of our manufacture. We will sell them low.
17 in. x8 ft. Putnam Lathe. Good Order.
18 in. x6 ft. Engine Lathe. Good Order.
18 in. x10 ft. Engine Lathe. Good Order.
12 in. x23 in. x35 in. x10 ft. Lw. Pond Planer. Good Order.
12 in. x23 in. x25 in. x10 ft. Lw. Pond Planer. Good Order.
12 in. x23 in. x25 in. x10 ft. Lw. Pond Planer. Good Order.
12 in. x24 in. x4 ft. Planer. Good Order.
12 in. x25 in. x5 ft. Lw. Pond Planer. Good Order.
12 in. x25 in. x5 ft. Lw. Pond Planer. Good Order.
12 in. x26 in. x7 ft. Mattawan Planer. Good Order.
12 in. x26 in. x7 ft. Mattawan Planer. Good Order.
12 in. Hendey 2-Spindle Drill Press. Good Order.
12 in. Hendey Drill Press. Good Order.
13 in. Drill Presses. Good Order.
13 in. R. G. Drill Press. Good Order.
13 in. R. G. Drill Press. Good Order.
13 in. Drill Presses. Good Order.
13 in. Drill Presses. Good Order.
13 in. R. G. Drill Press. Good Order.
13 in. Drill Presses. Good Order.
13 in. Drill Presses. Good Order.
14 in. Red Drill Press. Good Order.
15 in. R. G. Drill Press. Good Order.
17 in. Acme Single Drill Press. Good Order.
17 in. Acme Single Drill Press. Good Order.
18 in. throat, to punch 1 in. hole in ½-in. iron. A1 Order.
19 in. Milling Machine. Good Order.
19 in. Hilling Machine. Good Order.
19 in. Milling Machine. Good Order.
19 in. Hilling Machine. Good Order.

LODGE & DAVIS MACHINE TOOL CO.

MANUFACTURERS OF
IRON AND BRASS WORKING MACHINERY.
NEW YORK STORE, 64 CORTLANDT STREET.
WORKS, CINCINNATI, OHIO.
WESTERN HOUSE, 88-70 S. CANAL ST., CHICAGO.
Store—S. E. Cor. Water & Market Sts., Pittsburgh.
Boston Office, No. 23 and 25 Purchase Street.

SECOND-HAND MACHINERY.

laner, planes 16 ft. long, 62 in, x48 in, laner, planes 8 ft. 24x24 in, laner, planes 8 ft. 24x24 in, laner, planes 6 ft. 52x26 in, laner, planes 6 ft. 52x26 in, laner, planes 6 ft. 52x26 in, swing, lane, Boring and Turning, 15 ft. bed, 84 in, swg, lane, Boring and Turning, 15 ft. bed, 84 in, swg, lane, Boring and Turning, 15 ft. bed, 84 in, swing, A1, langine Lathe, 16 ft. bed, 24 in, swing, A1, langine Lathe, 16 ft. bed, 24 in, swing, A1, langine Lathe, 17 ft. bed, 22 in, raised to 32 in, lin, letteral Boring Mill.

in, Stevens' Pulley Lathe

Engine Latthe, 10 ft. bed, 25 in , raised Engine Lathe, 11 ft. bed, 22 in swing, 14 ft. Vertical Boring Mill. 25-in. Stevens' Pulley Lathe. Automatic Rack-Cutting Machine. 20 in stroke Friction Shaper. 475 lbs. Merrill Pattern Drop Hammer, 11 ft. 24 in. Stover Dimension Planer. Send for list Second-hand tools.

NEW YORK MACHINERY DEPOT, Brooklyn Bridge Store, 16, New York

LIST OF DISPLACED WESTING HOUSE STANDARD AUTOMATIC ENGINES, IN GOOD RUNNING ORDER, FOR SALE CHEAP BY THE SOUTHERN COTTON OIL CO., GIRARD NATIONAL BANK BUILDING, PHILADELPHIA, PA.

4 60 horse-power Engines, at New Orleans, La.
1 150 horse-power and one 60 horse-power, at
Mentgomery, Ala.
2 150 horse-power, at Atlanta, Ga.
2 150 horse-power, two 45 horse-power and one
60 horse-power, at Savannah, Ga.
2 45 horse-power, at Columbia, S. C.
1 75 horse-power, at Houston, Texas.

ALSO LIST OF DISPLACED HYDRAULIC LSO LIST OF DISPLACED HYDRAULIC PUMPS, IN GOOD RUNNING ORDER MADE BY THE SMITH & VAILE CO AND NOW AT THE FOLLOWING MILLS OF THE SOUTHERN COTTON OIL CO:

fouston, 10; New Orleans, 8; Montgomery, 5; Atlanta, 5; Memphis, 5; Little Rock, 5, and Savannah, 1—in all 39.

FOR SALE.

Complete set of Spoke Machinery, used not over four months. Cost \$1,500. Offer wanted. 2

BOLT HEADERS – Several improved Lewis will make up to 1½ inch; all guaranteed. Can see some of this make working in New York City.

No, "O" KNOWLES STEAM BOILER FEED PUMP, \$25.

10 NEW HAND-MADE ROAD MACHINES, two horse, perfect. Adapted to country road-making, acraping ice, etc. Send for circular and price.

ACME BOILER COMPOUND will do satisfactory work. Will send anywhere to be tried strictly on its merits. If satisfactory pay for it; if not, no charge. Send me trial order.

FIVE TONS ONE INCH OCTAGON STEEL, made for gun barrels. Buyer struck a hard spot and rejected same. At for bolts, braces, railings, etc. Can you use it?

ings, etc. Can you use it?
7

50 BARRELS LIGHT AND MEDIUM MACHINERY OIL, guaranteed. Will ship anywhere. If satisfactory pay me 18 or 25 cents (according to which grade is shipped); if otherwise, return and I will pay freight both ways. 8

If you use steel, brass or bronze castings, set descriptions and secure my figures before plach order.

H. H. MANSFIELD,

126 Liberty Street, NEW YORK. NEW AND SECOND-HAND

MACHINERY

Bought, Sold and Exchanged. COTTON, WOOLEN AND KNITTING MACHINERY.

F. H. POTTER,
18 Custom House St., PROVIDENCE

FOR SALE CHEAP.

A COMPLETE ELECTRIC LIGHT PLANT, suitable for smull town.

100 H. P. BALL AUTOMATIC ENGINE, BOILERS, PUMPS and FIX FURES.

100 ARC DYNAMOS, an + LAMPS, Poles, Wire

FRANK TOOMEY,
131 N. 3d S'reet, PHILADELPHIA, PA.

FOR SALE,
DIAMOND PROSPECTING CORE DRILL

Capacity about 3 000 feet. First-class machine Used only four times. Cost about \$6,000, In good order. Will be sold cheap, if taken promptly. Address

W. C. JEMISON, Prest., TUSKALOOSA.

FOR SALE CHEAP. One 10X12 25 H. P. Secon 1-Hand

CENTRE CRANK ENGINE.

THE BURTON MACHINE CO., ERIE, PA.

Machinery, New and Second-Hand For Sale.

Machinery, New and Second-Hand For Sale.

96 in, swing, 56 ft. bed, h'ds raised to sw'g 13 ft. A
30 in, swing, 50 ft. bed, for rolling mill forg's, new.
42 in swing, 13 ft. bed. At.
32 in, swing, 12, 14, 16, 18 ft. beds. New.
21 in, swing, 12, 14, 16, 18 ft. beds. New.
21 in, swing, 12 and 12 ft. beds. New.
21 in, swing, 75 and 8 ft. beds. New.
21 in, swing, 76 and 8 ft. beds. Several makers.
18 in, swing, 6 and 8 ft. beds. Several makers.
15 in, swing, 6 and 8 ft. beds. Several makers.
14 in, swing, 8 ft. bed. Several makers.
15 in, swing, 8 ft. bed. Several makers.
16 in, swing, 8 ft. bed. Several makers.
25 in, swing, 8 ft. bed. Several makers.
25 in, swing, 8 ft. bed. Several makers.
26 in, stoke. Grad shapers, steptoe. New
9 in, 16 in, stoke. Grad shapers, Good order.
20 in, 22 24, 28, 30, 36 in, Drills. New & 2d-hand,
24 in, 24 ft., 5 ft., 6 ft. Planers.
26 in x46 in, x37 ft. Planers.
27 in, x48 in, x37 ft. Planers.
28 in, x48 in, x37 ft. Planers.
29 in, x48 in, x37 ft. Planers.
20 in, x48 in, x37 ft. Planers.
20 in, x48 in, x37 ft. Planers.
21 in, x48 in, x37 ft. Planers.
22 in, x48 in, x37 ft. Planers.
23 in, x48 in, x37 ft. Planers.
24 in, x48 in, x37 ft. Planers.
25 in x48 shaper standard Engine.
11x18 borizontal slide valve Engine.
2000 lb. BEMENT STEAM HAMMER.

Open side extension Planer, three heads, 1 o house power Westinghouse standard Engine, 11x18 horizontal slide valve Engine.
2000 lb. BEMENT STEAM HAMMER.
100 lb. Bradley Helve Hammer.
Car axle Lathe, Bement 1½ and 1½ Bolt Cutt rs.
9 and 12 in. stroke Slotting Machines.
50 in. Bliss Squaring Shears, lot boiler shop tools

Geo. Place Machine Co. 120 Broadway, N. Y.

E. M. HOPKINS,

Railway, Machine Shop and Foundry Supplies

And Ornamental and Structural Iron Work,

1371/2 BAY STREET, (Room 5) SAVANNAH, GA

GEORGE A. EVANS, Steel Rails, Railway Equipment,

18 Wall St., New York City.

FOR SALE.

One Second-Hand

BROOKS LOCOMOTIVE

four drivers, forty-two inches in diam-ter, wheel front, pony truck, eight wheel tender; e thirty-six inches; weight in working fifteen tons. In good condition and ready mediate delivery at Kinzus, Pa. e want SECOND-HAND RAILS fit for research to the property of the pro

ROBINSON & ORR, 419 Wood Street, PITTSBURGH. PA.

GEORGE PLACE.

Late the George Plac

Equipment of Railway & Car Works

EQUITABLE BUILDING,

RAILWAY SUPPLIES AND EQUIPMENT.

LOCOMOTIVES

DUMMIES, CARS,
RAILS, FASTENINGS, FROGS,
CROSSINGS AND SWITCHES.
Complete outfits, Power Plants, Belting, etc.
Contracts taken. Write for prices.
W. W. MARMADUKE,
WASHINGTON, IND.

STEEL RAILS.

New and Second Hand.

WM. MINNIGERODE, Lynchburg, Va.

OLD RAILS.

53-pound Steel, 400 tons 35-pound ons 30-pound Iron, all good order, , Two six driver. 3-ft. gauge En-r standard gauge Freight Engines.

SOUTHERN IRON & EQUIPMENT CO. 67 Old Capitol Bui'ding, ATLANTA, GA.

THE ARD NUMBER HALLS, SPICIAL BARK, TRACK SPICIAL BARK, TRACK BELLER AND NUMBER R. B. SPICIAL R. S. SPICIAL R. S.

(New and Second Hand.)

146 BROADWAY NEW YORK

STEEL RAILS

And Track Material complete for Logging and Mining Roads and Industrial Enterprises on the

Instalment Plan.

Payment, cash margin 35 per cent., balance outbly for 34, 36 or 60 mouths. Also

Locomotives and Cars

The STEEL RAIL SUPPLY CO. HUMPHREYS & SAYCE, Mgrs., 10 Wall St., New York. We have no Agents.



INTERNATIONAL RAILWAY EQUIPMENT & SUPPLY CO. Incorporated. Principal Office, "ALDRICH COURT," 45 Broadway, N. V.

Orders and Inquiries Solicited for every description of

RAILWAY EQUIPMENT AND SUPPLIES.

MACHINE SHOPS FOR SALE.

Best located in North Carolina. Well equipped and doing a paying business Satisfactory reasons for selling. Address

"MACHINE SHOPS,"

Care MANUFACTURERS' RECORD.

SOUTHERN LUMBER DIRECTORY.

A List of Leading Lumber Dealers and

This list of representative Southern lumber merchants and manufacturers is published for the benefit of those who desire to reach responsible houses in this branch of business in the South Readers of the MANUFACTURERS' RECORD who have occasion to correspond with any of the firms mentioned below will confer a favor by requirimpted this reaching the response. mentioning this paper.

Yellow Pine.

I. B. Gordon & Co., Alpine, Ala.
Villa Rica Lumber Co., Anniston, Ala.
J. R. Adams & Sons, Birmingham, Ala.
Hawkins & Smith, Birmingham, Ala.
C. T. Hughes & Co., Birmingham, Ala,
Riddle & S mpson, Birmingham, Ala.
Southern Supply Co., Birmingham, Ala.
Marhura & Loues, Boreman, Ala.
Marhura & Loues, Boreman, Ala.
Marhura & Loues, Boreman, Ala. Southern Supply Co., Birmingham, Ala.
Marbury & Jones, Bozeman, Ala.
D. W. & U. Blacker, Brewton, Ala.
D. W. & U. Blacker, Brewton, Ala.
J. A. Dudiey, Clauton, Ala.
J. A. Dudiey, Clauton, Ala.
J. A. Dudiey, Clauton, Ala.
L. B. Wells, Clauton, Ala.
L. B. Wells, Clauton, Ala.
H. C. Higman & Co., Decatur, Ala.
Dunham Lumber Co., Dunham, Ala.
Gadaden Lumber Co., Gadaden, Ala.
Tuscaloosa Lumber Co., Hull, Ala.
Bay City Lumber Co., Molile, Ala.
E. B. Vaughan, Mobile, Ala.
Alabama Lumber Syndicate, Montgomery, Ala.
W. A. Drives & Co., Montgomery, Ala.
W. A. Drives & Co., Montgomery, Ala. S. B. Allen & Co., Montgomery, Ala.
W. A. Drives & Co., Montgomery, Ala.
W. A. Drives & Co., Montgomery, Ala.
Moore, Kirkland & Co., Montgomery, Ala.
W. W. Wadsworth, Wadsworth, Ala.
Arkadelphia Lumber Co., Ashton, Ark.
Empire Lumber Co., Ashton, Ark.
Long B dl Lumber Co., Buckner, Ark.
Cotton Belt Mill Co., Cotton Belt, Ark.
Eagle Lumber Co., Eagle Mills Ark.
Red River Lumber Co., New Lewisville, Ark.
A. J. Neimeyer Lumber Co., Waldo, Ark.
Fordyce Lumber Co., Fordyce, Ark. Fordyce Lumber Co., Fordyce, Ark. The Florida Phosphate Co., Ltd., Phosphoria, Fla S. Betts & Co., Ashburn, Ga J. S. Betts & Co., Ashburn, Ga.
G-ess Lumber Co., Atlanta, Ga.
Wilson Coal & Lumber Co., Atlanta, Ga.
D-nalson Lumber Co., Donalsonville, Ga.
Perkins Manufacturing Co., Augusta, Ga.
Stillwell Millen & Co., Savannah, Ga.
F. F. Puney, Hardaway, Ga.
Charles Bawich & Co., Hazelhurst, Ga
Alderfer & Bull, Isabella, Ga.
Hogan & Winger, Kensington, Ga.
L. A. Williams, Sunner, Ga. Hogan & Winger, Kensington, Ga.
J. A. Williams, Sumner, Ga
A. I. Duncan & Co., West Bowersville, Ga.
W. E. Mayne, Carpenter, Ky.
P. Hendrickson, Conant, Kv.
Perkins & Miller Lumber Co., Ltd., Westlake, La.
Lock-Moore & Co., Ltd., Westlake, La.
R. J. Avcock, Longstreet, La.
C. P. Brasher, Marthaville, La.
Loseph Horst, Mauginsville, Md.
Elliott, Crawford & Co., Myrtle, Miss.
P. B. Myers & Son, Myrtle, Miss.
Ocean Springs Lumber Co., Ocean Springs, Miss.
B. J. Cansey, West, Miss.
Cary E. Spence, Pass Christian, Miss.
Keystone Lumber & Imp. Co., Bogue Chitto, Miss.
J. S. Blackburn, Ellisville, Miss.
W. L. Raukin & Bro., Shannon, N. C. R. F. Moss, B. ker, Va.
The A. F. Withrow Lum, Co., Millboto Depot, Va.
U. B. Simpson & Sou, Natura, Va.

North Carolina Pine,

Page Lumber Co., Aberdeen, N. C.
The Greenville Lund & Imp Co., Greenville, N.C.
Guilford Lumber Mfg. Co., Greensboro, N. C.
Goldsboro Lumber Co., Goldsboro, N. C.
G. Vyne & S.n., Wilkesboro, N. C.
J. thu Hickson & Co., Lynchburg, Va.

John Hickson & Co., Lynchburg, Va.
Cypress,
Morris & England, Keo, Ark.
Cypress Lumber Co., Sherrill, Ark.
T. O. Wilson Lumber Co., Tillar, Ark.
Nuchner & Brown, Peach Occhard, Ark.
Moline Lumber Co., Helena, Ark.
J. C. McCain, Greenway, Ark.
W. R. Emerson, Enerson, Fla.
J. C. Burleigh, Midland, Fla.
F. S. Bamberg, Jaaper, Fla.
J. Temple, Temple's Mills, Fla.
J. P. L'elle, Sumuer, Fla. Geo H. Barker, Waldo, Fla.
A. A. Bunnell, Raulerson, Fla.
Windemere Land & Lumber Co., Windemere, Fla.
Kelly, Cosby & Co., Jug Tavern, Ga.
Dietrich & Dopson, Lenox, Ga.
W. T. McArthur, McArthur, Ga.
W. H. Moxley & Co., Macon, Ga.
W. R. Peterson & Co., Wadley, Ga.
Lawless & Kyle, Franklin, La.
Louisiana Cypress Lumber Co., Harvey, La
Callahan & Lewis Mfg. Co., Patterson, La.
McEwen & Murray, New Orleans, La
Hanson & Smith, Wilmington, N. C.
J. C. Fulton, Aransas Pass, Texas.
Calcasieu Lumber Co., Austin, Texas. Geo H. Barker, Waldo, Fla.

M. T. Jones & Co., Childress, Texas, J. H. Folkey, Korville, Texas.

Hardwoods

Hardwoods,

Martin & Vaughan, Bellefonte, Ala,
North A'abama Lumber Mfg. Co., Bridgeport, Ala,
Bridgeport Lumber Co., Brigeport, Ala,
Hill & Mitchell, Center Star, Ala,
W A. Koeppel, Coaling, Ala,
Decatur Lumber Co., Decatur, Ala,
H. S. Freeman, Decatur, Ala,
Black Warrior Lumber Co., Demopolis, Ala,
Alabama Lumber & Mfg. Co., Gurley, Ala Black Warrior Lumber Co., Demopolis, Ala.
Alahama Lumber & Míg. Co., Gurley, Ala.
C. G. Huffman, Hollywood, Ala.
Clifton & Hendrix, Jasper, Ala.
Elliott & Carter, Jasper, Ala.
W. M. Beatty, Austin, Ala.
J. W. Ray, Arkadelphia, Ark.
D. sha Lumber Co., Arkanaas City, Ark.
Batesville Lumber Co., Batesville, Ark,
Russell & Elder, Beebe, Ark.
South'n Hardwood Lumber Co., Black Rock, Ark.
E. M. Ford Land & Timber Co., Gilmore, Ark. E. M. Ford Land & Timber Co., Gilmore, Ark Kelley & Wells Lumber Co., Newport, Ark. Kelley & Wells Lumber Co., Newport, Ark.
Cream City Lumber Co., Lamberthville, Ark.
I. M. Meflert, Lowell, Fla.
Ray & Geise Bronwood, Gx.
Altamaha Cypress Lumber Co., Brunswick, Ga.
Montford & Mitchell, Butler, Ga.
Glasgow & Henderson, Cassville, Ga.
Green & Eshum, Clay Hill, Ga.
W. H. A'len, Cordele, Ga.
Greer Bros, Ada, Ga.
D. T. Harris, Dixon, Ga.
W. T. Opie, Dover, Ga.
A J. McMullen, Hartwell, Ga.
Matthews & Anderson, Knoxville, Ga. Matthews & Anderson, Knoxville, Ga. R. W. Ballard, Newton Factory, Ga. R. W. Ballard, Newton Factory, Ga.
O. W. Wadley, Rogers, Ga.
L. T. Brawner, Adairville, Ky.
G. W. Hummer, Adairville, Ky.
W. Conn & Son, Bedford, Ky.
Snider Bros., Berea, Ky.
Gibson & Hale, Flat Lick, Ky.
J. L. Naylor, Wickliffe, Ky.
Samuel Anglen, Lafayette, Ky.
H. E. Miller, Lewisburg, Ky.
Fetter Cochran & Co., Louisville, Ky.
J. C. Williamson, Mouth of Pond, Ky. C. Williamson, Mouth of Pond, Ky-The Cumberland Co., Middlesborough ters & Bringhurst, Pineville, La. . H M: Bride, Winnfield, La J. H. McBride, Winnheld, La.
The Loomis & Hart Mfg. Co., Chattai
E. Cravens, Bagwell, Texas.
Jas. M. Williams, Charlottesville, Va.
Smith & Co., Reedy Ripple, W. Va.
Shelly & Wirgman, Romney, W. Va.

Shingles.

Shingles,
A. C. Danner, Mobile, Ala,
J. Bradley, Hartsell's, Ala.
Conecub & Patsaliga Lumber Co., Luverne, Ala,
G. N. Buchanan, Luverne, Ala,
J. D. Cameron & Son, Mobile, Ala,
Mobile Shingle Co., Mobile, Ala,
C. G. Richards & Sons, Mobile, Ala,
Stewart & Butl, Mobile, A'a.
Stewart & Butl, Mobile, A'a.
Guif States Lumber Co., Montromery, Ala,
Guif States Lumber Co., Montromery, Ala, Stewart & Butt, Mobile, A'a.
Gulf States Lumber Co., Montgomery, A
D. Goulet & Co., Black Rock, Ark.
F. McKay, Black Rock, Ark.
Camden Shingle Mill Co., Camden, Ark.
Price Lumber Co., Paragould, Ark.
Carey & Ollinger, Bagdad, Fla.
A. L. Wellman & Co., Beresford, Fla.
A L. Wellman & Co., Beresford, Fla.
Florida Shingle Mills, Brooksville, Fla.
W. Springstead & Son, Brooksville, Fla.
Mearns Shingle Mill, Davenport, Fla.
Wm. A. McCann, Jacksonville, Fla.
A. G. Russel, Oviedo, Fla.
Little & Chapman, Rosewood, Fla. Little & Chapman, Rosewood, Fla. Atlanta Lumber Co., Atlanta, Ga. Ananta Lumber Co., Aranta, Ga.
P. G. Grant, Atlanta, Ga.
T. E. Collier, Cordele, Ga.
King & Bursch, Hawkinsville, Ga.
Yarbrough & Perry, Fullington, Ga.
Ino. Akers & Co., Scotland, Ga.
Baily Bros., Toccoa, Ga.
Mayfield Shingle Co., Wishart, Ga.
Worth Lumber Co., Wishart, Ga.
Worth Lumber Co., Worth, Ga.
G. W. Clere, Coalton, Ky.
Mon-oe Smith, McKinney, Kv.
The J. H. Poe Shingle Co., Lake Charles, La.
Harris & Thornton, Chattanooga, Tenn.
L. Miller Shingle Co., Orange, Texas.
Kizer Lumber Co., Texarkana, Texas.
Fritz Sitterding, Richmond, Va.
Gurley & Rogers, Norfolk, Va.
Nottingham & Wrenn, Norfolk, Va.
Ino. L. Roper Lumber Co., Norfolk, Va. P. G. Grant, Atlanta, Ga.

Staves and Heading. Staves and Heading.
F. W. Sharp & Co., Larkinsville, Ala.
J. R. Adams & Son, Longview, Ala.
Montgomery Stave & Eldg. Co., Montgomery, Al.
J. C. Sheets & Co., Montgomery, Ala.
P. V. Deland, Black Rock, Ark.
Hammett & Bailey S ave Co., Greenway, Ark.
Arkansas Stave Works, Greenway, Ark.
J. F. Hasty & Son, Paragould, Ark.
G. M. Rosegrant, Paragould, Ark. G. M. Rosegrant, Paragould, Ark, Wilson Bros., Piggott, Ark. Backus Bros., Pine Bluff, Ark. Little Rock Cooperage Co., Little Rock, Ark.
Tampa Lumber Co., Tampa, Fla.
Hagan & Platt, Pine Level, Fla.
R. H. Brewer, Cedartown, Ga.

Georgia & Tennessee Lumber Co., Laconte, Ga. F. H. Waring & Co., Cement, Ga. Allen & Briggs, Bardwe'l, Ky. F. B. Freeman, Cumberland Falls, Ky. Johnson & Overshiner, Hopkinsville, Ky. Johnson & Overshiner, Hopkinsville, T. H. Meehan, Louisville, Ky. J. G. Evans & Co., Moorehead, Ky. Tippett & Co., Moorehead, Ky. Edward Farley, Paducah, Ky. Lester & Little, Sloans Valley, Ky. Pinnell & Webb, Somerset, Ky. George D. Eike, New Orleans, La. E. O. Felton, Ronceverte, W. Va. J. Beckwich & Co., Waverly, W. Va.

Rallroad Ties.

W. J. Felt, Greenup, Ky.
G. & A. Kopp, Louisville, Ky.
Southern Tie & Lumber Co., Louisville, Ky.
James S. Pope, Halls, Md.
P. L. Co., quest & Co., Norfolk, Va.

Spokes and Handles,

ob Wise & Son, Fulton, Kv. lucah Handle Works, Paducah, Ky. Hendersonville Mfg Co., Hendersonville, N. C. Rutherfdton Sp. & Hdl. F'y, Rutherfordton, N. C. C. J. Dundas, Statesville, N. C. Thomasville Spoke Works, Thomasville, N. C. Johnson Bros., Brownsville, Tenn.

Southern Real Estate Directory.

For the convenience of the many readers of the MANUFACTUREPS' RECORD it has been deemed advisable to collect under this head a reliable list of Realty Agencies of the Southern States. The value of such a list for the purpose of Ready Reference will immediately become apparent to all who are interested in the growth of this

DISTRICT OF COLUMBIA.

WASHINGTON, D. C.—Chas. A. McEuen Real Estate, Loans and Insurance. 1420 F. St.

FLORIDA.

OCALA-J. V. Burke, Phosphate, Pine a
Cypress Timber Lands. Loans negotiated

GEORGIA.

MACON American Investment & Loan SAVANNAH-Jackson & Whatley, Coun-selors at Law. Real Estate and Collection Department. W. G. Woodfin, manager.

NORTH CAROLINA.

ROCKY MOUNT-Geo. S. Sartin, Town Lots, Acre Property, Farms. NORTH WILKESBORO-W. F. Trogdon, Town Lots and Farm Lands.

Town Lots and Farm Lands.

OLD FORT-O. H. Blocker, Real Estate.

Timber and Mineral Lands. RALEIGH-J. M. Broughton & Co., Real Estate, city and country realty.

ROCKY MOUNT—Arrington & Arrington to m. Real Estate. Correspondence invited.
WINSTON—E. R. Amis, Real Estate. First-class investments a specialty.

TENNESSEE.

MEMPHIS—Hodge & Bro., 59 Madison St. Real Estate Agents and Dealers. VIRGINIA.

CHARLOTTESVILLE—J. C. McKennie & Co., Real Estate and Insurance Brokers.
NEWPORT NEWS—Cottrell Company, Real Estate. Correspondence invited. NORFOLK-A. W. Cornick & Co., Real Estate Agents, 102 Main Street.

HOTEL, Overlooking Central Park,

ice used are vaporized and

Eco Magneto Watchman's Clock

An Flectric Watchman's Clock Without Ratteries. It dispenses entirely with a Battery. It cannot be tampered with nor false records be ade on it.

C. D. BERNSEE,
Temple Court Building, NEW YORK CITY.

TELEGRAPH LINES.

J. J. COILE & CO.,

nt Horeb, East Tennessee, make Telegraph is in complete working order a specialty. Wiring by Contract at Low Figures.

WORK GUARANTEED FIRST-CLASS.

You have tried to make money, sawing lumber, and have just paid expenses.

SOULE STEAM FEED, You will soon get rich.



RICH GOLD MINES.

I have in my hands two adjoining gold properties of about 1,250 acres each, aggreproperties of about 1,250 acres each, aggregating nearly 2 500 acres, easily accessible, in the United States of Colombia. South America, with ore of the most extraordinary richness, some of which carries as much as three thousand dollars (\$3,000) in gold to the ton, and all being of high grade.

much as three thousand dollars (\$3.000) in gold to the ton, and all being of high grade.

These m nes are of ancient discovery and were worked with great profit for a long period, being only abandoned on account of political troubles before and after the war of liberation.

These troubles have been happily settled for over a quarter of a century, and the Colombian R-public is based upon the theory of and similar to our own government, with civil and religious liber, y and equal rights to all, and is as stable as any government in the world.

These mines are so richly endowed with auriferous mater al, from the easily worked sand, gravel, and dirt, (carrying virgin dust and nuggets), to the historie veins of free milling quartz, that when properly equipped a profit of ten thousand dollars (\$10,000) a day or over three million dollars (\$3,000 coo) annually is a very low and conservative es imate.

There is an abundance of timber and unfailing water power, with a genial and healthy climate.

It is proposed to organize this property on a basis of five million dollars (\$5,000), upon which there can be dividends earned of 60 per cent, or more, and the parties furn shing the original capital in small or large sums for this organization, which will be about twenty five thousand dollars (\$25,000), will be let in on a basis of two and a half cents (\$2'c.) on the dollar, with the privilege of purchasing pro rata at five cents (\$5c) on the dollar sufficient amount to give them a controlling interest if they so desire.

There is also the right of prior possession to double the amount of contiguous land which will swell the property to about seven thousand, five hundred (7.500) acres.

The poverty of the owners of this property, being land poor, is the reason of this nusual effer, and they will retain as much of the property as they possibly can, parting with only what is necessary in order to work it.

Struated in the jurisdiction of Simiti, District of Guamneo, Province of Mompos,

ing with only what is necessary in order to work it.

Situated in the jurisdiction of Simiti, District of Guamaco, Province of Mompos, State of Bolivar.

An experienced miner, who has been over and thoroughly examined the property, says, "there is more gold there than in the entire State of California," while another says "the evidence of mineral wealth was so great that I almost doubted my own sanity, and were I to tell California and Colorado miners even one-tenth of what I actually saw, I would be branded as a foolish liar or raving maniac."

L. BRECKINRIDGE CABELL,

Room 17, 53 Broadway, New York.

TRUSTEES' SALE

A Valuable Gold Mine,

550 ACRES OF LAND,

A New 30-Stamp Mill, Concentrators, Eagines, Hoisters, Pamps, &c.

By virtue of a deed of trust to us, the undersigned trustees, we will offer for sale at public auction in front of the Richmond & Danville Railroad, at King's Mountain, North, Carolina, on Tuesday, the 15th day of November, 1892, at 3.30 o'clock P. M., the property known as the King's Mountain Mine, consisting of about 550 acres of land; a new mill equipped with thirty stamps, five concentrators, we eighty horse-power engines, hoisters, sinking and other pumps, all in good order and constituting a complete outfit for the working of the Mine.

This property is about two miles from King's Mountain on the Richmond & Danville Railroad. The Mine is well known, and has heretofore produced a large amount of bullion, and is thought to be very valuable.

Terms of sale: One-third cash; balance in six and twelve months. A deposit of \$300 required at the time of sale.

at the time of sale.

GEORGE T. BASON & Trustees. CHARLOTTE, N. C.

Canning Machinery.

Especially adapted to the South. Full instructions furnished for putting up outfits; also for processing all the various canned goods without the aid of skilled labor

A. K. ROBINS & CO.

721 E. Pratt Street, BALTIMORE, MD

CANNING FACTORIES

Equipped Complete Equipped Complete

CANS AND CANNERY SUPPLIES OF ALL KINDS. DANIEL C. TRENCH & CO. CHICAGO.

BOLTS EXPANSION



For Fastening all Kinds of Structure to Brick

Patentee and Manufacturer,

ISAAC CHURCH,

Send for Catalogue. TOLEDO, OHIO

THIS SPACE IS RESERVED

The Miller Safe & Iron Works,

BALTIMORE, MD

PROTECT YOUR FACTORY FROM FIRE

with a system of AUTOMATIC

SPRINKLERS

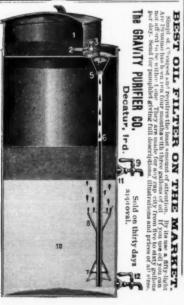


Write to us for Estimates.

NERACHER & HILL SPRINKLER CO.

WARREN, O.

COLUMBUS, GA.



THOS. J. SHRYOCK & CO.

WHOLESALE

umber and Commission Merchants, YELLOW PINE and HARDWOOD,

Shryock's Wharf, Baltimore, Md. Correspondence Solicited.

HOPKINS, DWIGHT & CO.

COTTON, COTIONSEED OIL SOUTHERN PRODUCE

COMMISSION MERCHANTS

Room 52, Cotton Ex hange Bldg., NEW YORK.

Gustavus C. Hopkins. Lucius Hopkins Smith. Samuel Hopkins.



"Swinging Hose Rack,"

PATENTEE & MANUFACTURER
JNO. C. N. GUIBERT,
ROOM 57, 115 BROADWAY
NFW YORK.
BEND FOR CATALOGUE

The Standard Steel Works

Locomotive and Car Wheel Tires

Office, 220 S. Fourth St., Philadelphia, Pa.

E. HARRINGTON, SON & CO.

N. 15th St. & Penna. Ave., PHILA., Pa.



Iron Working Machinery

EVIATHAN

BELTING. Is the Strongest, Runs the Most Evenly and Best Adapted for Cotton, Woolen, Sa and Planing Mills Brick and Tile Works and HEAVY DRIVING Generally. Main Beiting Co 1219-1235 Carpenter St. PHILADELPHIA. 120 Pearl Street, Boston. 248 Randolph Street,

JORY & CO.

S. E. Cor. Bal'Imore & Light Sts , BALTIMORE, MD.

Brass and
Bevelled Plate SIGNS Engraving,
Glass Carving.

EMBOSSED GILDING ON GLASS.

Newest Designs, Finest Work, Lowest Prices

ARKHURST

BURR PICKER.
BEST FOR WOOL OR COTTON. Burr Picking with cards is expensive. If you doubt it, write to
THE ATLAS MFC. CO.

FOR WHITE OR NORWAY

Pine Box Shooks

IN CARLOAD LOTS.

WM. HORNER, Reed City, Mich.

Manufacturers, Phosphate, Iron, Mangane and other Ores, Elevators and Conveyors, Feundry, Hollidaysburg, Pa. IMPROVED WASHERS Engineers

Material.



"CARFIELD"

Double Jet Injector,
Adapted to every condition of Boiler service. THE "GARFIELD" INJECTOR CO. WADSWORTH, O.

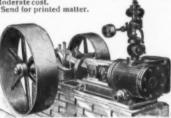
ENGINES & BOILERS

8 to 25 HORSE-POWER. High in Grade.

Low in Price.

Send for Pamphlet. The W. C. LEFFEL CO.

FNCINES STATIONARY PORTABLE



Wheland's Foundry & Machine Wks. Tenn.

The Plumbers' Favorite



WATCHMAN'S TIME DETECTOR.



impressions. I stations. and further informa-

A. NANZ & CO.

116 Chambers Street,

New York.

The Cincinnati Tool Co., Cincinnati, O.



Drills for Wood and Metal, Spoke Shaves, Clamps, Pliers, Saw Sets, &c.

CINCINNATI PATENT SAW SET.

Only Saw Set with a regulated blow.

Write or Prices and Catalogue, and mention this paper.

New York Office, 118 Chambers St.

Mave been Imitated, but Never Equalled—they are Beyond Comparison!

We Make 90 per cent. Of the

Wire Mats Sold in America.



Because They are Odorless, Everlasting And "Best."

**See that your mat has bross tag attached stamped "HARBAR".

HARTMAN MFG COMPANY, WOPK, BEAVER FALLS. PA.

anches: 1c2 Chambers St., New York; 508 State St, Chicago; 51-53 S Forsyth St., Atlanta.

Write for our Testimonial Booklet and Illustrated Catalogue—Mailed Free.

SAMUEL L. AVERY.

The AVERY SUPPLY CO.

Plows, Agricultural Machinery and Vehicles.

Also Depot for Heavy Machinery, such as

ENGINES, BOILERS, HOISTING MACHINERY, ELEVATORS, IRON & WOODWORKING MACHINERY Improved Agricultural Machinery. Specialties in HARDWARE.

Office and Warerooms 505 Main Street.

CORRESPONDENCE SOLICITED.

Address LOUISVILLE, KY.

DESIRABLE OFFICES

CAN NOW BE RENTED IN THE NEW

MANUFACTURERS' RECORD BUILDING .

Baltimore, Md.

This seven-story building is located at the corner of North and Lexington Streets, within a few yards of the Post-office and City Hall and near all the Law Courts. The offices are large, light and always cool in summer. The building is elegantly finished in oak, is heated by steam and lighted by gas and electricity, and has an Otis electric elevator. There are no more desirable offices in Baltimore, and the rentals are low.

FOR PARTICULARS ADDRESS

THE MANUFACTURERS' RECORD,

BALTIMORE, MD.

H. E. McWane, President and General Manager. W. D. Campbell, Secretary and Treasurer.

THE GLAMORGAN COMPANY, Proprietors of

ILL CITY PIPE WORK



Manufacture all kinds of Blast Furnace, Coking and Muning Ma-chinery; Boilers, Engines, Tran-way and Construction Car Cast-ings, and Tobacco Machinery, &c. Prices on application.

LYNCHBURG, VA.

CHATTANOOGA FOUNDRY & PIPE WORKS
AVID GILES, Prest. C. B. IBESTER, Vice-Prest. M. LLTWELLYN, Sec. and Treas
Successors to D. GILES & CO., Chattanooga, Tenn., Manufacturers of



Castings & Patterns of Every Description Made

JOHN W. HARRISON, President and Trea urer THOS. HOWARD, Vice-President.

E. H. QUREN, Secretary P. MCARTHUR, Superimendent

HOWARD-HARRISON IRON COMPANY,



Wo ks at BESSEMER, ALA.

Fiexible Jaints. Heavy Leam Castings.
Offlies at BESSEMER and ST. LOUIS.

ARCHER BROWN, Trens E. M. HINCHMAN, Secy.

J. K. DIMMICK. Genl Mgr. M. H. CRAWFORD, Cont. Agt.



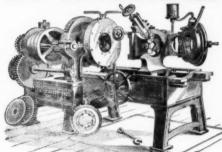
THE RADFORD PIPE & FOUNDRY CO.

During 1892 supplied Pipe to Boston, Philadelphia Bel imore yracuse, also Lowe'l, Fitchburg, West New on, Mas., and unerous other cities in the West, South and Northwest.

General Offices, CINCINNATI. Eastern Office, BOSTON.

Foundries, RADFORD, VA.; ANNISTON, ALA.

IDERS' SONS



Pipe Cutting and Threading

MACHINES

For Pipe Mill and Steam Fitters' Use

TAPPING MACHINES

For Steam Fitting. Also,

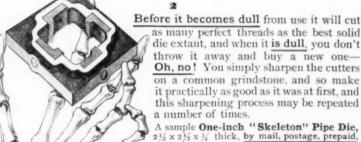
Steam & Gas Fitters' Hand Tools, 31 Atherton St.

YONKERS. N. Y.

Maule's "Skeleton" Pipe Die

Two "Points" about it—only 2 (There are plenty more only mention these tw

The First Cost to you of MAULE'S "SKELETON" PIPE DIE is less than that of any other Pipe-Threading Die-and



A sample One-inch "Skeleton" Pipe Die, 2½ x 2½ x ½ thick, by mail, postage, prepaid, will cost you 62 cents, and will be sent upon receipt of a Postal note for that amount.

DO NOT SEND US ANY POSTAGE STAMPS.

ay return such sample to us, at our expense, if, after seeing it, tousider it worth the price. Don't the above sound as if it you some money—if TRUE?

PANCOAST & MAULE,

243-245 South Third St. Philadelphia, U.S.A.

IN NATIVE COLORS. RED, BROWN AND BLACK. FOR BRIDGE, FURNACE AND RAIL-ROAD USES.

of, Weatherboard, Iron and Coach Painting. Dry and Mixed.

VIRGINIA PAINT COMPANY, Manufacturers.

J. A. Chew, Manager, Goshen, Va.



HOTEL and INSTITUTION WORK CAREFULLY HANDLED. OAKLEY & KEATING, 40 Cortlandt St., New York

Machinery. aundry

Washing Machines Ironing Machines Centrifugal Machines, Mangles, Wringers, &c. BOILERS AND ENGINES.

Hotels and Public Institutions.

THE A. M. DOLPH



Adjustable Legs, Detachable Lever.

Run Lightest, Make Strongest Blast & Last Longest.

ALL DESIRABLE STYLES AND SIZES.

Sold by Hardware and Machinery Dealers everywhere.

Send for Catalogue of these and

► Hand & Power Blower, Blacksmith Drill Presses,&c. THE FOOS MFC. CO. SPRINGFIELD.OHIO.

Turned and Highly Polished Iron and HAFTING. Steel Shafting. Guaranteed round straight and true.

THE MOST PERFECT SHAFTING MADE.

The McKaig Iron & Steel Shafting Works, CUMBERLAND, MD.



R. M. WHITNEY

MANUFACTURER OF

BLACK BIRCH HUBS. OLEAN, N. Y., U. S. A.

These Hubs are made in size ffrom 6x8 to 16x18 inches, and are especially adapted to dry climates. Send for Circular and Prices.

effernan Stained Glass Works,

LYNCHBURG, VA.

ECCLESIASTICAL, MEMORIAL AND DOMESTIC ART GLASS. WRITE FOR PRICES.

ERNEST V. RICHARDS, Stained Glass Works

ART GLASS FOR ECCLESIASTICAL AND DOMESTIC USES.

WILMINGTON, N. C.

Church and Art Glass. BEVELED PLATES.

HENRY SEIM & CO. GLASS

Ribbed and Plate Glass. MIRROR PLATES.

EHRET-WARREN MANUFACTURING CO., St. Louis, Mo.

Black Diamond

ROOFING

Eight Years in the South.

Water, Acid and Fire Proof;

More Durable than Metal

FOR ROOFS OF ANY DESCRIPTION.

EASILY APPLIED. Made EXCLUSIVELY by us in ST LOUIS.

QUALITY AND WORKMANSHIP GUARANTEED.

Write for Cat dogue, Prices, Etc.



DIAMOND BRAND

Tarred Felts,

ROOFING AND PAVING PITCH,

Building, Sheathing and Insulating Papers.

"Neponset" Waterproof Papers.

Send for Catalogue, Prices, Etc , direct to the Manufacturers.

BUFFALO SCALE COMPANY, SCALES OF ALL KINDS.

ICE AND REFRIGERATING MACHINERY AND CORLISS ENGINES. WEISEL & VILTER MANUFACTURING CO., Milwaukee, Wis.

AND REFRICERATING MACHINERY. IMPROVED COMPRESSION SYSTEM. E. C. HILLYER & CO., 7 and to-ton Machines, complete | Manufacturers, NEWPORT NEWS, VA. in every detail, ready to ship. | Send for pamphlet "How to Make an Ire Factory Pay"

THE FRED. W. WOLF COMPANY,

the Linde Ice and Refrigerating Machinery.

302 to 330 HATHORN AVENUE,

556 to 566 N. HALSTED STREET.

- CHICAGO, ILL.

Brewery Work and Cold Storage our Specialty,

Plans and Estimates Promptly Furnished.

THE BURNS MANUFACTURING CO.

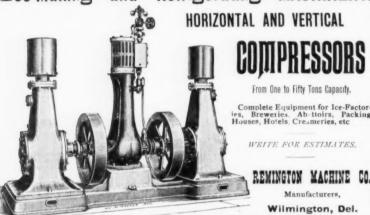
IMPROVED ABSORPTION lce and Refrigerating Machines.

For Ice Making, Packing Houses, Cold Storage, Creameries and Breweries

nstructed on scientific p inciples, giving great est possible results at Minimum cost, Reliable, economical, easily hand ed and well constructed.

ery Machine Guaranteed.

Office, 827 Equitable Building, ATLANTA, GA Ice-Making Refrigerating



To Architects, Builders and Owners.

Attention is called to Fire-Proof and Vermin-Proof MINERAL WOOL.

As a Lining in Walls and Floors for Preventing the ESCAPE OF WARMTH AND THE BEADENING OF SOUND. SAMPLE AND CIRCULARS FREE.
U. S. Mineral Woel Co., 2 Cortlandt Street, N. T.

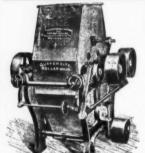
HEAT, COLD AND VER-MIN PROOF. MOST PERFECT INSU-LATOR KNOWN—Deadening sound, prevention of spread of fire

Cold Storage, Ice-House, Dry-Kilns, Green-Houses, Refrigerators, Safe, Boiler . Send for pamphlets and Sample; mailed free.

ROANOKE MINERAL WOOL COMPANY, Roanoke, Va.

BURR FRENCH





Quaker City Roller Mills

AND ROCKING FEEDER COMBINED.

Two Roller Mills, Smooth and Corrugated Rolls, Four Roller Mills, Corn and Cobb Mills and Breakers, Quaker City Aspirators. Round Reels and Round Scalpers,

The Trimmer Smut Machine, The great rough on fuzz

THOMPSON & CAMPBELL, 1030 Germantown Ave. Philadelphia, Pa.



Steam Riding Gallery.

The Delight of Young and Old.

best machine made, write

ARMITAGE-HERSCHELL CO.

Manufacturers.

TONAWANDA, N. Y.

THE GALLOPING HORSE STEAM CAROUSAL,



Merry-Go-Round

OWEN & MARGESON,

Hornellsville, N. Y.

IRON

-STANDING SEAM .-

CORRUGATED .- V. CRIMP.

GALVANIZED IRON TIN PLATE. THE CINCINNATI CORRUGATING CO.,

PIQUA,

CEILING &c. WANTED EVERYWHERE



The BERGER MFG. CO., Canton, O.

ments for ROOF. ING'till you have

It Excels all other Metal Roofs.

IRON ROOFING AND CORRUGATING CO. CINCINNATI, SHIO.

Manufacturers of Superior Grades of all Gauges et Standing Seam, Roll Cap and all styles

FINCS, SIDINGS and CEILINGS.





J. H. ELLER & CO.

STEEL ROOFING.

CORRUGATED IRON, DECORATED CEILINGS, Etc. He dquarters for Galvanized Steel Eave Troughs and Conductor Pipes, Write us for prices. Address Office No. 267 R. 5th St., CANTON, OHIO.



THE ACME ROOFING CO., CANTON,

STEEL ROOFING Corrugated, Beaded and Crimped Iron ROOFING, SIDING and CELLING.

EAVE TROUGH, COMBUCTOR PIPES, HANGERS, ETG.

Write for catalogue, price list and samples.

ROOFING and CORRUGATED IRON.

The latest and Guaranteed to be the BEST.
Write for Samples and Prices.

OSTORIA STEEL ROOFING CO.



Texas Coal Tar & Asphaltum Co.

101 Main Street, Dallas, Texa

Roofing and Paving Materials

ASPHALTUM AND COAL TAR CEMENTS, ROOF COATINGS, TAMPICO ASPHALTUM METALLIC PAINT, ROOFING AND BUILDING PAPERS OF ALL KINDS, CARPET, DEADENING AND INSULATING PAPERS,

THE IMPROVED 3 PLY METALLIC ROOFING AND SIDING.



The Sims Mfg. Co. NEWARK,

Finest, Best and Cheapest Eave Trough in the World.

Also Plain, Round and Corrugated Conductor Ridge Rolls and Roof Gutters, &c. All made from the very Best Galvanized Steel, in 8 foot lengths.

L. D. BERGER, Agent, 224 Arch Street, Philadelphia, Pa.

WATER-PROOF GUTTA

The Great Roofing for the South. Send for Southern Manufacturers' References. or Flat Roofs, Factories, Mills, Lumber Sheds, etc. Send for Catalogue. Testimonials, Samples, etc. Empire Paint & Roofing Co., III N. FOURTH STREET,

CAMBRIDGE ROOFING CO.

Cambridge, Ohio, P O Box 25. Ch.ttanooga, Tens., P. O. Box 30.

COOFING CORRUGATED IRON AND 12 OTHER STYLES
EAVE TROUGH AND CONDUCTOR PIPE. WRITE FOR PRICES.

POWERVILLE CARBONIZED STRINGED

e and S-Ply READY ROOFING

And Genuine Asphalt Paint.

It is the Best.

WESTERN AGENTS: Writ: for Pric s.

A. RASCH & SON, 511 Walnut Street St Louis, Mo

BERGER BROS., No. 237 Arch Street. E Tinners' Hardware and Roofers' Supplies. SOLE MANUFACTURERS OF

BERGER'S CELEBRATED PATENT

Trough Hangers and Pipe Fasteners

We invite special attention to our No. 7 Hanger, to drive square in the box; No. 10, to nail on the front, and No. 11, to the side of the rafter, for Mills and Factories where the rafter are exposed; also No. 12 Hanger, to fasten under the shingles. These Hangers give the trough a handsome paneled appearance, are exceedingly strong and handy to put up, and are a general favorite wherever introduced.

We also invite attention to our late improved Patented Pipe Fastener. This Fastener can be used in any position either right or left, on all kinds and sizes of pipe. Can never ratte or get loose, and with a variety of wood and brick drives of different lengths, pipes can be put up in all kinds of positions. Also all kinds of Plinget Hooks, Wood, Brick, Soil Pipe and Plumbers' Hooks and Straps. Send for sample order; if not satisfactory, freight allowed both ways.

STEEL CEILING KINNEAR & GAGER CO.

COLUMBUS, O.

PATENT

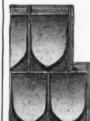
BOSTWICK



ing; fire-proof; ventilating, ized iron and copper cornices and gutters, etal work for buildings. Send for illustrated

E. VAN NOORDEN & CO. 383 Harrison Ave. BOSTON, Mass

"VICTORIA"



Fo: Churches, Schools, Residences, etc.

Send for Catalogue and Prices.

Makes a tight roof nd pronounced by nost handsome hingle in the market

Cortright Metal Roofing Co.,

Broad and Hamilton Streets, PHILADELPHIA, PA.

Western Office; 134 VAN BUREN ST., CHICAGO, ILL.

Eastern Office: 83 CEDAR STREET. NEW YORK.

FIRE **PROOF** STEEL ILATH

A GREAT BAVING OF MATERIAL AND LABOR. Recommended by architects

BOSTWICK METAL LATH CO. 38 Park Row, NEW Y Niles, Ohlo, and Wheeling W Va. NEW YORK.

IF you are thinking of enlarging your mill, factory or mine, or of purchasing machinery of any kind, send us a postal card giving char-

acter of machinery desired.

ecord

rinting

OUSE, Cor. Exchange Pl. and Commerce St.

 \Longrightarrow the canton steel roofing co., canton, o.,

PATENT FOLDED LOCK SEAM STEEL ROOFING, CORRUGATED IRON,

CRIMPED EDGE IRON AND SIDING LOCKING BUILDINGS & SHUTTER'S PAINTS, WATER PROOF AT THE CO. CATALOGUE

SAMPLES PRICE LIST.

THE WASHINGTON HYDRAULIC PRESS BRICK

ORNAMENTAL, PRESSED, ROCK-FACED AND ROMAN BRICK

BRICK FOR ARCHES

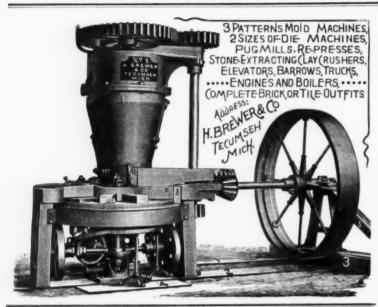
GROUND TO ANY RADIUS.

KELLOGG BUILDING. WASHINGTON, D. C.

AGENTS FOR

RICKETSON'S MILWAUKEE MORTAR COLORS,

RED, BLACK, BROWN, BUFF



Chambers' Brick Machinery



15.000: 25.000, 50,000 PER DAY CAPACITY. GUARANTEED AND FURNISHED ON THIRTY DAYS' TRIAL.

CHAMBERS BROS. CO., Philadelphia, Pa.



COMPLETE OUTFITS A SPECIALTY. BRICK

MACHINE

J. W. PENFIELD & SON,

The POTTS BRICK MAC

MANUFACTURERS OF

Horizontal Stock Brick Machine, Disintegrators, all sizes, Mold Sander, Pug Mills and Elevators.

We always carry a large stock of Brickmakers' Supplies, as Molds, Trucks, Barrows, s, Winding Drums, Kilu Doors, Grate Bars, Shafting, Pulleys, Belting, &c. Complete Outfits a Specialty. Write for catalogue (D),

C. & A. POTTS & CO.,

Indianapolis, Ind.



BRICK MACHINE WORKS.



GEORGE CARNELL,

1819-1821 Germantowa Avenue and Fifth Street MANUFACTURER OF

BRICK * TILE MACHINERY, STEAM OR HORSE-POWER.

BRICK MACHINES,





ADDRESS THE FREY, SHECKLER COMPANY, BUCYRUS, OHIO, U.S.A.



IMPROVED BRICK MACHINERY.

BRI K MAKERS SUPPLIES A SPECIALTY.

Send for illustrated Catalogue, FLETCHER & THOMAS, Indianapolis, Ind.

SEND FOR PRICE LIST.

THE WALWORTH RUN FOUNDRY & MFG. GO., Cleveland, O.

entral Machine Works,

F. G. & J. N. KAUFHOLZ, Proprietors.

BRICK MACHINES, Patent PLANER SLOTTERS,

Hydraulic Presses, Centering Machines, Special Machinery, etc.

Office and Works, 226-236 ABBEY STREET,



TRUCKS.

Mounted on both Iron and Rubber Wheels. Trucks made to order. HEAVY MILL CASTORS, Iron or Rubber Wheels.

Write for prices.

Catalogues ree

CEO. P. CLARK, Box A, Windsor Locks, Conn.



WHEELS

Specially adapted to Brick and Tile Barrows and icks, and all other purposes where a STRONG Prices Reasonable. Send for Circular.

Correspondence Solicited.

The Arnold Metal Wheel Co., NEW LONDON

Largest and Only Exclusive Wheelbarrow Manufacturers in the World. EVERY VARIETY IN STOCK.



STEEL, IRON AND WOOD WHEELS.

Sest Michigan Hardwood Timber and First-Class Workman ship. Also manufacturers of Rope and Spiral Mould-ings. Write for our catalogue and prices. Get the best and don't fear your competitors.

GRAND RAPIDS WHEELBARROW CO.

THE AKRON TOOL CO., AKRON, OHIO.

AKRON

Tubular Steel

For all purposes. Also MONEIL'S PATENT

Balanced Charging Barrows.

Before Placing Orders Get Our Prices

Established 1832 on Present Premises.

The Best

is

Always the

Cheapest



Therefore

Buy

Our

COLOPHINE

or

Perfect Oils.

The above are our specialties in MACHINERY OILS, and are the Best Oils for the price manufactured. We can give you anything in the OIL LINE, any grade, at the very lowest prices. Correspondence solicited.

WM. C. ROBINSON & SON.

Manufacturers

Dealers

217 South Street,

BALTIMORE, MD.

Established 1874. MANUFACTURERS OF Taper Shank Drills,

Straight Shank Drills, Blacksmith Drills. Bitstock Drills, Straight Fluted Drills. Machine Bit Drills, Cleveland Twist Drill Co.



Cor. of Lake and Kirtland Sts., Cleveland, O. Write for Discounts. OFFICES- { Cor. of Lake and Street, New York.

The Otis Elevator has been the standard for 36 years, and is in use in the principal cities of the OTIS BROTHERS & CO.,

38 Park Row, New Yo.k.

Send for a circular of the Otis Electric Pump. Can' be attached to any electric line.



Morse Elevator Works. MORSE, WILLIAMS & CO.

ELECTRIC, HYDRAULIC, BELT AND HAND-POWER,

PASSENGER AND FREIGHT ELEVATORS.

WORKS-Frankford Avenue, Wildey and Shackamaxon Streets, PHILADELPHIA.

(1105 Frankford Avenue, Philadelphia, 108 Liberty Street, New York. 33 Lin. oin Street, Boston. 1116 E Street N. W., Washington, D. C. OFFICES-



E. A. BLANTON, JR.

S. NORRIS CRAVEN.

HOWARD FOUNDRY & MACHINE WORKS,

PASSENGER ELEVATORS

GENERAL MACHINE WORK,

17 South Eighteenth Street,

PHILADELPHIA, PA.

ERPRISE SAFETY ELEVATOR CO.

BUILDERS OF

PASSENGER AND FREIGHT

VATORS

CHATTANOOGA, TENN.

Office, 117 Market Street.

Works, 118 Broad Street. Send for catalogue.

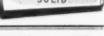
GRAVES

2,300 PASSENGER AND FREIGHT IN USE.

THE CRAVES ELEVATOR CO., Main Office and Works, Rochester, N. Y. Branches at NEW YORK, BOSTON, DETROIT, ST. LOUIS and ATLANTA, GA.

NEW PROCESS TWIST DRILL CO. Twist Drills of every description. TAUNTON, MASS.

and CHUCKS. Endorsed by progressive mechanics everywhere.



GRAHAM TWIST DRILL & CHUCK CO., Detroit, Mich. ufacturers of GRAHAM'S PATENT GROOVED SHANK TWIST DRILLS

MANUFACTURERS OF

Self-feeding Reamers, Expanding Reamers. Shell Reamers, Stay-bolt Taps, Taper Reamers.



SHUTTLES The only Double Outside Catch Shuttle made.

The SEACONNET Mills, Fall River, wove in 301 days of 10 hours each, 14,339,219 yards of 64x64 goods on the 9.48 of our "NEW HIGH-SPEED LOOMS," a daily average of 51 3-10 yards per loom per day. Cotton and Silk Weaving. KILBURN. LINCOLN & CO, Fall River, Mass.

SMITH, SAUNDERS & COLLINS.

gents for PETTEE MACHINE WORKS, Builders of REVOLVING FLAT CARDING.

Complete Cotton Mill Machinery, Steam and Electric Pauts. Transmission Machinery. NEWTON and CHARLOTTE, N. C. Careful attention given to plans.

BARRINGTON J. KING, Secretary and Trea



THE BROWN & KING SUPPLY CO.



Cotton Woolen Mill Supplies

General Supplies for Railroads, Machine Shops, Quarries, &c.

Wrought Iron Pipe, Fittings and Brass Goods. ATLANTA, CA.

WATERS & GARLAND.

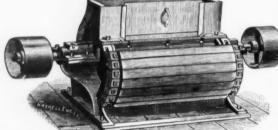
LOUISVILLE, KY.

Southwestern Depot for

OYT'S Short Lap Belt. Dodge Wood Pulleys DOST'S Zero Metal. Glover's Belt Hooks.

Coupes' Excelsior Raw-Hide Lace.

Climax Cotton Seed Huller.



GEO. J. FRITZ, Engineer,

Founder and Machinist,

2008-20?8 S. 3d St.

ST. LOUIS, MO.

Send for catalogue and price list. Steam Engines, Doc tors, Pumps, Hullers, Seed Meal Moulders, Barrel Trussers.

Cotton Seed Oil Mills We are making Various Sizes, from the PLAN TATION MILLS of five tons to the LARGE CITY MILL of fifty tons per day. Our Mills have all the Latest Modern Improvements in Machinery, and produce the very best results.

Hydraulic Cotton Presses

SIMPLE. COMPACT AND VERY
POWERFUL. Worked either by Hand
or Steam-power. Not liable to get out of
order and very durable. They are the BEST BALEING PRESS made for Cotton, Wool. Rags, &c

Threshers and Cleaners Simplest, Cheapest and Best Made.

THE CARDWELL MACHINE COMPANY, RICHMOND, VA.

VAN WINKLE GIN & MACHINERY CO.

ATLANTA, GA., and DALLAS, TEX.

COTTON GINS, FEEDERS, CONDENSERS AND PRESSES, Cotton-Seed Oil Mills ICE MACHINERY.



SHAFTING, PULLEYS, WIND MILLS, TANKS, PUMPS, Etc.

NATIONAL COTTON

A New Invention that is Commanding Widespread Attention

Its advantages over every gin in the market are so many that we cannot enumerate them here.

THE NATIONAL COTTON CIN CO.

35 Hanover Street, BOSTON, MASS.

SEND FOR CIRCULAR NOW.

A. W. MANN, Manager,

LOWELL MACHINE SHOP

Cotton Machinery,

We Manufacture Everything Required for the Complete Equipment of Cotton Mills.

Plans and Estimates Furnished on Application

Correspondence Sollcited.





Waltham Emery Wheel Co. Manu-

WALTHAM, MASS. By our various processes we can guarantee atisfaction for the greatest variety of work, EMERY WHEEL MACHINERY, EMERY, CORUNDUM, Etc.
These wheels can be bought of our agen's rordered direct.

Your Advantage to correspond with us regarding emery wheels.

Grant Corundum Wheel Mfg. Co.

CHESTER, MASS.



Emery M Corundum Wheels

actured in the South for the first time.

Quality Unexcelled. Prices Low as the Lowest, Southern Trade Solicited. AGENTS WANTED In all the large places of the South to handle our goods. Write for terms, &c.

SOUTHERN EMERY WHEEL CO.

Charles Heaton, Prest.

ALL GOODS OF OUR MAKE CONTAIN BRASS LABEL.

MICHIGAN EMERY WHEEL CO.

194 Catherine Street, Detroit, Mich.

Solid Emery and Corundum Wheels, to Run Wet or Dry, Special Shapes.

PERFECTION SAW GUMMERS.

SEND FOR PRICE LIST.

IRA DIMOCK, Pres.

Established 1867.

J. L. OTIS, Treas.

Northampton

Emery WIL

Wheel Co.

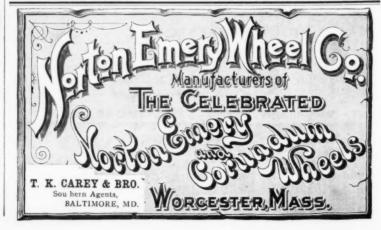


Premium Solid Emery

CORUNDUM WHEELS,

Emery Wheel Machinery. LEEDS, MASS.

20 SOUTH CANAL STREET, CHICAGO, ILL.



AMERICAN SUPPLY CO.

Formerly MYRON, FISH & CO., of Valley Falls, R. I., and KENDRICK, LOOM HARNESS CO., of Providence, R. I.

LOOM HARNESS AND REEDS

OAK BELTING, LACE AND PICKER LEATHER,

And Dealers in Supplies for Cotton, Woolen and Silk Mills.

Agents for JOSEPH NOONE'S SONS.
Roller, Slasher and Clearing Cloths.

Roddick's Patent Improved Oil Cans,

Calf, Sheep and Lamb Roller Skins and

ROLL COVERERS' TOOLS.



WIRE GOODS OF ALL DESCRIPTIONS

WIRE HEDDLES

We Have Unequalled Facilities

SPECIAL NOTICE TO WORSTED AND SILK MILLS.—We manufacture both Worsted and Cotton Machine-Knit Mail Harness for Weaving Fine Worsted and Silk Goods. Also a full line of Supplies for Jacquard Looms.

Office and Salesrooms, 10 Exchange Place, PROVIDENCE, R. I. PROVIDENCE AND VALLEY FALLS, R. I

A. D. LOCKWOOD. Prest.

JOHN KENDRICK, V .- Prest

MYRON FIRH, Treas.

JOHN A. CARTER, Secty.

JOSEPH H. KENDRICK, Gen. Agent.

Conveying, Elevating and Power Transmission Machinery

For Cotton Seed Oil Mills, Phosphate and Fertilizer Works, Ginneries, Starch Works, Sugar Refineries, Cement Works, Rice Mills, Grain Elevators, Flour Mills, Etc.



"SOUTH BEND"
Wood Split Pulleys,
With Iron Hubs
and Iron Bushings.
Will Not Slip on
Shaft. No Danger

H. W. CALDWELL & SON COMPANY,

GENERAL MACHINISTS,

127, 129, 131, 133 West Washington Street,

CHICAGO, ILL.



CALDWELL STEEL CONVEYOR

Automatic Power Grain Shovels.



AVERY PLAIN

AND CALDWELL-AVERY

CORRUGATED

SEAMLESS STEEL

ELEVATOR

BUCKETS.



LARGE AND COMPLETE STOCK FOR IMMEDIATE SHIPMENT.

S PROCKET WHEELS, Link Belling, Cotton, Rubber and Leather Belling, Elevator Boots, Bolts and Buckets, Spouts, Gearing, Friction and Jaw Clutches, Hangers, Shafting, Pillow Blocks, Iron Pulleys, Set Collars, Take-up Boxes, Turn Heads, Perforated Metal, Wire Cloth, Etc.



W. J. CLARK & CO. Salem, Ohio,



Elevating and Conveying Specialties

"Salem" Elevator Bucket

For Mill and Elevator Work, Ear Corn, Corn and Cobs Ores, Coal, Broken Stone, etc.

Send 9 cents (stamps) for postage on Sample Salem Bucket and Illustrated Catalogue

WELLER MFG. CO.



Send us a list of what you want, get our prices, we do the rest.

CHICAGO.

Our Specialties;
Steel Conveyors,
Steel Buckets,
Elevator Boots,
Tiexible Spouts,
Turn Heads,
Hopper Bottoms,
Power Shovels,
Car Pullers,
Belt Conveyors,
Priction Clutches,
Pullevs, Shafting &c.



No. 4 Double Cylinder Planer and Matcher.

wide, both side

No. 3 SAME STYLE -- SINGLE CYLINDER

he above are reliable in every particular and will give satisfaction to all mill men who desire high efficiency and durability. For general work they cannot be surpassed, as they have the very latest improvements and are the most popular machines of their class now being built.

Our line of planers is a very extensive one, and supplies almost any want.

CATALOGUE . . SERIES H.

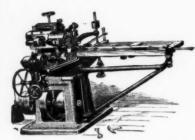
CINCINNATI, OHIO, U. S. A.

The Largest Line in the world of the Most Approved Ideas for Fast, Perfect and Economical

SHOWING ALMOST 300 MACHINES

WOOD WORKING MACHINISTS.

We Meet the Wants of Planing Mills, Sash, Door, Blind, Furniture, Chair, Spoke and Wheel Factories, Carpenters, Car Works, etc.



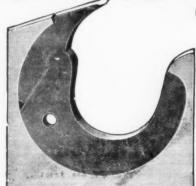
3 Sash and Door Tenoning Machine.

The many points of advantage which we introduced on our tenon machines gives them a preference for accurate and steady work.

They are the most advanced machines of this type, and have the best essentials for rapid production and convenience of operation.

E. C. ATKINS & CO., Indianapolis, Ind.

Circular, Band, Gang, Drag and Cross-Cut Saws.



Cylinder

Saws

Re-Steeled.

ATKINS' SILVER STEEL BAND SAWS

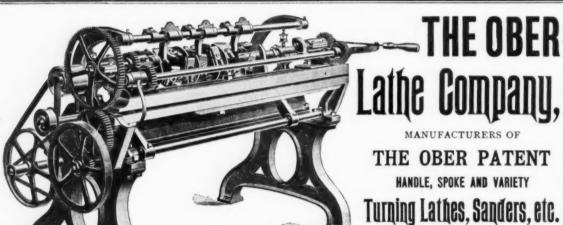
TEMPERED BY NATURAL GAS.

SILVER STEEL

Workme Pactory 8 Branch



ALSO A FULL LINE OF MILL SUPPLIES.



Lathes for Turning Axe, Adze. Pick, Sledge, Hatchet, Hammer, Auger, File, Knife, Chisel and Double-Bitted Axe Handles,

Whiffletrees, Yokes, Spokes, Porch Spindles, Stair Balusters, Table Legs, Chair Legs and other kinds of HANDLES AND WORK.

Send for circular and prices. CHAGRIN FALLS, OHIO, U.S. A. Trevor Mfg. Co. | Successors to | LIENTER | L.Y.

GANG EDGERS

SAW MILLS, Shingle and Lath Machines and Swing Saws,

BRENNAN & CO.
estern Agricultural Works,
LOUISVILLE, KY. Southwest

THE LATEST improved Stave Saws, Stave and Heading Jointers and Planers.

> ALVIN STREETER, Winchendon, Mass.

> > FOR THE BEST

MACHINERY For Shingles, Heading and Staves,



VENEER CUTTERS

IMPROVED **Gauge Lathes**

HANDLES, ETC. Address

CORDESMAN, MEYER&CO.

171 & 173 W. SECOND STREET, CINCINNATI, OHIO.



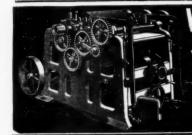
ood-Working Machinery OF EVERY DESCRIPTION.

ning Mills, Furniture and Chair Factories, Carriage, Wagon actories, Carriage, Wag and Agricultural Works.



Our Improved Sweepstakes PLANER, Matcher and Moulder

E. & B. HOLMES, Woodworking Machinery, BUFFALO, N. Y.



MACHINE LLIAMSPORT

OOD CUTTING MACHINERY FO PLANING MILLS, SASH DOOR AND BLIND FACTORIES, ALSO FOR CARRIAGE AND WAGON FACTORIES, SPECIAL MACHINES USED IN THE MANUFACTURE OF FURNITURE.

Send For 96 Page
Special Prices Quoted
On Complete Outfits.





UNITED STATES MACHINE CO.

WILLIAMSPORT, PA.

Vood - Working Machinery For Saw and Planing Mills, &c.

We Make a Specialty of Saws, Planers and Clamps.

Send for Circulars and Prices

PRYIBIL, 508 to 520 W. 41st Street



Wood Working Machinery,

CHAFTING, PULLEYS, HANGERS,

> Etc. Write for Catalogue



food Working Machinery





THE BENTEL & MARGEDANT CO., Hamilton Ohio.

Mood Working Machinery



Complete Outfits for Planing Mills, Sash, Door and Blind Shops, Furniture Factories, &c.

. B. SMITH MACHINE CO

BOSTON STORE. d 193 High St. (Fort Hill Square.) NEW YORK STORE,

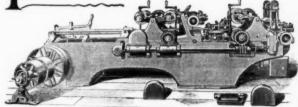
121 Liberty Street

SEND FOR OUR NEW CATALOGUE.
146 Pages Free



GLEN COVE MACHINE CO., Limited,

Machinery, Mill laning



SCREWFEED

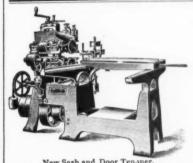
Planing and stehing Machin and Moulding Also the Celebrated

Double Decker, Glen Cove Special Flooring Machines.

Office and Works: 24, 26, 28, 30, 32 and 34 BROOKLYN, N. Y.

THE WARD HOOP MACHINERY.

CUTTERS, PLANERS, COILERS, POINTERS AND LAPPERS.
for Circulars and Pricos. FRONTIER IRON WORKS, Manufacturers, DETROIT, MICH.



Get our Cuts and Prices before bu ing WOOD WORKING MACHINERY of any description we will interest you.

INDIANA MACHINE WORKS, Fort Wayne, Ind.

SAWING MACHINERY BEACH'S PATENT SCROLL SAWING

Machines. More than 5,000 in use. You can stop, change the saw and get to work in 4 seconds.

ALSO Steel Saw Arbons, Slitting Saw Tables, Combination Saw Benches, Combined Rip and Out-off Saws. The Best Double and Single Out-off Saws Made on Earth. Com-

bined Square and Bevel Saw Gauges. You can't afford to buy any other. Send for catalogue and prices. Address (naming street)
H. L. BEACH, 110 Rose Street, Montrose, Pa.

SEND FOR THE

WOODWORKERS' MANUAL.

A treatise upon the selection, care and management of Wookworking Machinery; sensible advice on Belting, Lubrication, etc.

BY C. R. TOMPKINS, M. E.

Author of "History of the Planing Mill," etc.

CONTAINS NO ADVERTISING.

Sent Prepaid on Receipt of PRICE, 30 CENTS, by the Publishers.

THE JOHN A. WHITE CO. DOVER, N. H.

GAMO BAND SAWS. Damascus Tempered, with NATURAL GAS, of Superior Toughness. Å

DAMASCUS

EMERSON, SMITH & CO., LIMITED, Beaver Falls, Pa.

THE ARTISTIC WOOD WORKS, at LURAY, VA. Famous Caverus.

Operate the great Polyonal Machinery patented by the N L. & T. Co.

THE MOST EXTENSIVE WOOD TURNING WORKS IN THE SOUTH.

Execute Unique Designs from ¼ inch square to to inches square and 60 feet long. His b Finish Perfect Stock. Inimitable Execution. All kinds domestic thoroughly seasoned Hardwoods in unlimited supply. Capacity from 5,000 to 20,000 daily. Will execute from 'your or our' designs Address for catalogue, etc. THE LURAY ARTISTIC w OOD CO., Luray, vs.

THE BRADSTREET **Mercantile Agency**

WAS ESTABLISHED IN 1849.

CHARLES F. CLARK, P.

Baltimore Office, - American Building H. KERSHAW, Suot.

- TAKE THE -Cleveland, Lorain & Wheeling R. R.

CLEVELAND, OHIO,

WHEELING, W.VA

BEAUTIFUL SCENERY and QUICK TIME.
NO CHANGE OF CARS.

For time-cards, etc., address
OSCAR TOWNSEND, Gen. Manager

Wheeling & Lake Erie Railway. NEW THROUGH LINE

Toledo and Ohio River Points, TUEBENVILLE, WHEELING PITISBURG MARIETTA.

MARIETTA.

THROUGH COACHES to the OHIO RIVER, and THROUGH CONNECTIONS to PIT ISBURGH

And all points East, via Akron, Cuyahoga Falls, Kent, Ravenna, Leavittsburg, Warren, Niles, Grard, Youngstown, New Cast e and Alle pheny. The only line ticketing its passengers through to Philadelphia, New York and New England Cities, via Washington and Baltimore INE RATES.

A. G. BLA'R,

JAS. M HALI,

Pittsburgh & Lake Erie R R

CLEVELAND SHORT LINE.

20 Miles Shorter than any other libe ween Pittsburgh and Cleveland 4 Through Trains in each direction Daily.

The Favorite Route to Lake Chautauqua, Buff.lo, Niagara Falls, and all points in Central and Northern New York, New England and Canada. City Ticket Office,

E. C. Dunnavant, City Pass. Agt.
G. M. Beach, Gen'l Supt.
L. M. Warden, Trav. Pass. Agt.
A. E. Clark, Gen Pass & T'kt Agt.

CLEVELAND AND CANTON R. R.,

SHORT AND POPULAR LINE

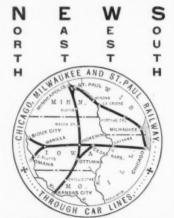
Cleveland, Canton and Zanesville.

No change of cars between Cleveland and Zane ville,

Three rains each way between Cleve and and Canton

Finest Day Trains in the State. Cars heated y steam from locomotive

J. W. WARDWRLI, Gen'l Supt. Cleveland, Ohio, A. Rokusek Gen'l Pisssenger Acent. F. R. Briggs, Assistant Gen'l Passenger Agent. H. A. Krnnrdy, Assistant Supt., Canton, Ohio.



GEO. H. HEAFFORD, General Passenger Agent. J. H. HILAND, General Freight Agent

Short and Only Direct Route Between

CLEVELAND, CAMBRIDGE, AKRON, CANTON MARRIETTA and WHEELING.

Four Through Trains Dally between Cleve-land, Akron and Canton. Through Pullman Palace Drawing Room Buffet Sleeping Cara be-tween Cleveland and Chicago. Ask for tickets via Valley and B. & O. Route.

J. T. JOHNSON,

General Supt.

J. B. CAVEN,

Gen. Pass. Ag

LOCATIONS FOR FACTORIES

Chicago, Milwaukee & St. Paul Railway Co.

INDUSTRIAL DEPARTMENT.

The C lcago, Milwaukee & St. Paul Railway ompany desires to have the raw material on its 55 miles of road in Illinois, Wisconsin, North-n Michigan, Iowa, Missourl, Minnesota, South

6,150 miles of road in Illinois, Wisconsin, Northern Michigan, Jowa, Missouri, Minnesota, South Dakota and North Dakota utilized.

In addition to the vast agricultural resources, its territory comprises forests of hard and soft wood, mines of iron and other metals, coal and other minerals quarries, clays of all kinds, tanbark, flax and other products. Wat.r-powers tooth river and artes an) are also still available. A number of new factories have been induced to locate—largely through the instrumentality of this Company—at enterprising towns on its lines. As the interest of the Company is to secure the location of industries at places where the surroundings will insure their permanent success, the information furnished a particular industry is pertinent and reliable.

The people on the whole System are one live and thriving community of business men in whose midst it is safe and profitable to settle. Lo al capital is being largely invested in local factor es, and taken as a whole, the country through which the road runs is commanding attention as the coming industrial territory of the United States. Solid concerns, manufacturers, large or small, who thoroughly understand their business are sought for at suitable points on the load.

oad.
Individuals or companies wishing to embark capital in Western industry can find a prefitable field.

For particulars relative to industrial advan-ages on the line, address

LUIS JACKSON,

INDUSTRIAL COMMISSIONER.

C., M & St. P. R'y, 160 Adams St., Chicago, Ill.

SOUTHERN PACIFIC COMPANY'S

CHEAP TRIPS TO

CALIFORNIA and MEXICO.

LEAVING NEW ORLEANS DAILY

"SUNSET ROUTE"

ELEGANT PULLMAN BUFFET SERVICE

To All Common California Points

The only Standard Gauge Short Line to the CITY OF MEXICO. The only line running Pullman Buffet Cars over the border.

For Map Folders, Time Schedules and any general information, please call on or address the undersigned :

E. E. Currier, N. E. Agt., No. 192 Washington Street, Boston, Mass. L H Nutting, E. P. Agt., No. 343 Broadway, New York.

R. J. Smith, Passenger Agt., 49 S. Third Street, Philadelphia, Pa. Geo C. Herring, Agt., 208 Lewis Building, Pitts-burg, Pa.

H Connor, Com. Agt.. Chamber of Commerce Building, Cincinna i, Ohio. Building, Cincinna I, Ohio.

W. G. Neimwer, G. W. Agt., 204 S. Clark Street, Chicago, Ill.

R. O. Bean, T. P. A., Nashville, Tenn.

R. H. Hill, T. P. A., Atlanta, Ga.

G. W. Ely, T. P. A., Montgomery, Ala.

E. HAWLEY, A. G. T. M. 343 Broadway, New York. J. G. SCHRIEVER, T. M. at system, New Orleans, La. W. C. WATSON, G. P. & T. A., New Orleans, La.

GENERAL OFFICES

NEW ORLEANS and SAN FRANCISCO.

WORLD'S FAIR ALBUMS.

Given Away by the C. H. & D.

"THE WORLD'S FAIR ROUTE" From Cincinnati.

A magnificent album of World's Fair views has been published by the Cincinnati, Hamilton & Dayton, which will be sent to any address on receipt of 10 cents in stamps. The Cincinnati, Hamilton & Dayton, in connection with the Monon Route, is the only line running Pullman perfected safety vestibuled trains with dining cars from Cincinnati to Chicago. The "Velvet" trains of the Cincinnati, Hamilton & Dayton are admittedly the 'Finest on Earth," and the line is a representative "World's Fair Roue." For tickets, rates, etc., ad ress any Cincinnati, Hamilton & Dayton agen'. To get an album send your address, with 10 cents in stamps, to E. O. McCORMICK G. P. & F. Agt., Cincinnati, O.

WHERE DOLLARS ARE MADE.



The line of the QUEEN & CKESCENT ROUTE through Kentucky, Tennessee, Alarama, Mississippi, and Louisiana

OFFERS CREATER OPPORTUNITIES TO SETTLERS.

MANUFACTURERS AND GENERAL

BUSINESS ENTERPRISES

other part of the U.S., vast be

COAL, IRON, TIMBER AND FARM LANDS,

Also THOUSANDS OF ACRES OF LONG LEAF YELLOW PINE for sale cheap. This road runs through the thriving towns of Lexington, Danville, and Somerset, Ky.; Rockwood, Harriman, and Chattanooga, Tenn.; Ft. Payne, Attalla, Birmingham, and Tuscaioosa, Ala.; Meridian, Hattiesburg, Jeckson and Vicksburg, Miss.; New Orleans, Delhi, Monroe, and Shreveport, La. Some of the new towns will donate money and land to locate Manufacturing enterprises.

The R. R. Co. will make low rates for Passengers and Freight, and afford investors every opportunity to examine the different localities. If necessary, will send a representative with the party.

Full particulars, and any required information, will be sent by mail on application to D. G. EDWARDS. G. P. & T. Agt.

Q. & C. Route. CINCINNATI, O.

A TLANTIC TRANSPORT LINE.

BRITISH BALTIMORE AND LONDON.

Calling at Swansea and Philadelphia on the outward passage.
S.S. Minnesota, 5,000 tns.
S.S. Maryland, 4,200 tns.
S.S. Montana, 4,200 tns.
S.S. Maine, 4,120 tns.
S.S. Mississippi, Bldg.

BALTIMORE STORAGE & LIGHTERAGE CO. 236 La Salle Street, and I o Fenchurch Street, Chicago, Ill. London.
400 Second Street, Baltimore, Md.

FURNESS, WITHY, & CO., LTD. AGENTS FOR

FURNESS LINE. REGULAR SAILINGS

NEWPORT NEWS, VIRGINIA.

FOR LIVERPOOL.
S.S. ISTRIAN 4,000 to
S.S. BULGARIAN 4,000 to
S.S. BAVARIAN 4000 to
S.S. MADRID 100

Through Bills of Lading issued to interior points in the United Kingdom, or on the Continent, at very favorable rates. For freight, &c., apply to

C. W. ROWLEY, Manager,

RICHMOND AND YORK RIVER LINE.

On and after MONDAY, February 20, 1892, the steamers of this line leave Baltimore daily Sunday excepted) at 5 P. M. for West Point, Richmond and the South, arriving at Richmond at 9,10 A. M., connecting with trains of the Richmod & Danville System. Steamer leaving Mondays, Wednesdays and Fridays calling at Gloucester Point and Allmond's Wharf; steamer leaving Tuesdays, Thursdays and Saturdays calling at Yorktown and Clay Bank. Through tickets and bills of lading issued to all points of the Richmond & Danville System. Way freight must be prepaid. Fare to Richmond, first class, \$2.00, second class, \$4.50. Tickets sold and bagging checked at Geigan & Co.'s, 205 East Baltimore Street.

REUBEN FOSTER. E. J. CHISM, General Manager. Gen. Freight & Ticket Agt. Office, \$30 LIGHT STREET.

THE BAY LINE

Fortress Monroe, Norfolk # the South.

e Bay Line comprises the New and Elegant Steame
"VIRGINIA," "CAROLINA" and "FLORIDA."

"VIRGINIA," "CAROLINA" and "FLORIDA."
All the Comforts and Luxuries of a first-class Hotel are
affor ded the traveler. 8 acious and elegant is a command
stateroom, fur hished with an especial view to comfort,
insurpassed Cuisine, which is made a specialty with this
lime. Elegant serve, eard courteous attention, Steams
cave Baltimore daily (except Sundays) at 9 P. M.
4 to 1d Point Comfort is located the Sp endid HYGEI A
10TEL, a Delightful Resort at all Seasons of the Ye r.
for lickets and L. formation 1 pply at Company's Office,
157 W. BALTIMORE STREET, BALTIMORE.

D. J. HILL, Superintendent, E. BROWN, General Ticket Agent.

THE FAVORITE PASSENGER ROUTE. MERCHANTS & MINERS'

Transportation Company.

Transportation Company.

Steamers sail from Baltimore, Md., TO BOSTON, Mass.. VIA NORFOLK, every TUESDAY, THURSDAY and SATURDAY at 2 P. M.

FARE-FIRS-Class, \$10.00 Round Trip, \$20.00 Second-Class \$2.00.

FOR PROIDENCE, R. I., every TUESDAY and THURSDAY at 2 P. M.

FOR SAVANNAH, Ga., every TUESDAY and FRIDAY at 3 P. M. Fare-First class, \$15.00; round trip, \$25.00; second class, \$10.00.

Baltimore TO JACKSONVILLE, Ma.—First class, \$20.65; round trip, \$36.30; steerage, \$12.50.

All tickets include meals and stateroom accommodations. Through tickets sold and baggage checked to all points South.

For sailing schedules and other information, apply to

A. L. HUGGINS, Agent,

Foot of Long Dock, Baltimore, Md.

J. C. WHITNEY, Traffic Manager,

No. 216 Water Street, Baltimore, Md.

MURRELL'S LINE

BRUNSWICK to LIVERPOOL and BREMEN.

The Only South Atlantic Direct Line to Fureneup Ports

SHORTEST ROUTE TO EUROPE.

ommencing September 30th, 1892, the follow Steamships will make regular sailings from nswick, Ga., to Liverpool and Bremen:

Tons. 1893 1869 Master.
CLARK.
BLACKLAW,
JENKINS,
BAILEY,
BAINBRIDGE. Steamship. Tons
WIVENHOE, 1893
HAV-GREEN 1869
J. M. LOCKWOOD, 1774
STORRA-LEE, 1734
DEERHILL, 1733

DEERHILL, 1733 BAILEY.
Additional Steamships will be placed on the ine as business warrants.
S. DEERHILL will sail from Liverpool for Brunswick September 1st.
S. HAY-GREEN will sail from Brunswick or Liverpool September 30th.
Consignments solicited to all points in United Lingdom and Continent of Eurore.
For Freight, Passage and general information pply to

THE BRUNSWICK TERMINAL CO.

General Agents, BRUNSWICK, GA. Or Messrs. C. E. DBWOLF & Co., Agents, 28 Brunswick Street, Liverpool, England.

POPULAR AND DIRECT ROUTE.

THE BAY LINE

For Old Point Comfort, Norfolk and the South.

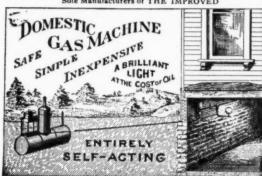
Steamers leave daily (except Sunday) Union Dock 6.30 P. M., Canton Wharf 7 P. M., arrives Old Point Comfort 7 A. M., at Norfolk at 8 A. M., Portsmouth 8.15 A. M. At OLD POINT COMFORT CONTROLOGY OF RICHMOND, Charlotteaville, Greenbrier, White Sulphur Springs, Louisville, Cincinnati and all points West. At NORFOLK with NORFOLK WESTERN RAILROAD for Petersburg, Richmond, Lynchburg, Roanoke, Bristol, Knoxville, Chattanooga, Memphis and the Southwest: also with the NORFOLK SOUTHERN RAILROAD for Elizabeth City, Edenton and Eastern North Carolina. A PORTSMOUTH, VA., with SEABOARD & ROANOKE RAILROAD for Weldon, Raieigh, Southern Pines, Pine Bluff Health Resort, Peachland, Mount Holly, Charlotte, Fayetteville, Newports, Savannah, Jacksonville and all Principal Southern Cities.

Pollace Steemers, Unsurpassed Cuisine, Undistant North Carolina, Augusta, Savannah, Jacksonville and all Principal Suffered Night's Rest. Swer Connection.

For tickets and information apply at Company's Office, 139 E. Baltimore Street.

Browe G. T. A. Kennon Jones. Agt.

NEW YORK DOMESTIC GAS MACHINE CO., 45 Dey Street New York.



Requires no Pumping, no Winding, no Adjusting, no Winding, no Adjusting, no Water Wheel, Water Jet, or other motive power. There are no Valves to be packed or manipulated, no Automatic Valveto wear out or become clogged. In short, it is the Acme of Simplicity and Perfection.

Every reader of this may enjoy the luxury of elegant Gas Light easily, conveniently and cheaply, and do away forever with the troublesome kerosene lamps.

Price of the Domestic Gas Machine about one-half of any other. They are packed and shipped to any part of the United States, or the world, in perfect working order.



Issues Policies of Insurance after Careful Inspection of the Boilers, covering Loss or Damage to Property, and Loss of Life and Personal Injury Arising from Steam Boiler Explosions.

company's operations can be obtained COMPANY'S OFFICE, Hartford, Conn., or at any Agency. 's operations can be obtained at the Full information

J. M. ALLEN, President. J. B. PIERCE, Secretary.

W. B. FRANKLIN, Vice-President. F. B. ALLEN, Second Vice-President.

J. B. FIERCE, Secretary.

BOARD OF DIRECTORS:

KALLEN, President.

BOARD OF DIRECTORS:

KEISON HOLLISTER, of State Bank. Hartford.

HARLES M. BEACH, of Beach & Co.

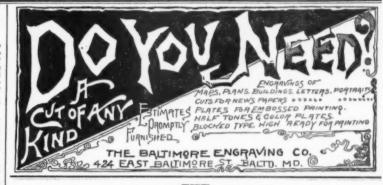
HARTford. Conn.

W. JILLSON, Inte Vice-Prest. Phoenix Fire Insurance of Co.

HARTFORD.

Maryland Department-LAWFORD & McKIM, Gen. Agents, 22 S. Holliday St., Bultimore





PREMIER FLOUR

Patapsco Flouring Mills.

ESTABLISHED 1774

Perfection in Flour.

Patagsco Superlative Patent,
THE PREMIER FLOUR OF AMERICA.

THE PREMIER FLOUR OF AMERICA.

C.A.G.AMBRILL MFG.Co. PALTIMORE

Orange Grove Extra,

C. A. GAMBRILL MFG. CO.

Office. 214 Commerce Street, Baltimore. Md.

NOW READY.

25th ANNUAL NUMBER

Of the Railroads of the United States for

1892.

CONTAINING DETAILED STATEMENTS OF THE OPERATIONS AND CONDITION OF EVERY RAILROAD COMPANY IN THE COUNTRY.

In one Volume. 1,500 Pages, Cloth, Royal Octavo. Price, \$6.00 Per Copy. By HENRY V. POOR.

Messrs, H. V. & H. W. POOR announce the publication of the twenty-fifth annual number of this work, in which is given in full detail the financial condition and the results of operations of all the railroad companies for 1891. Statements, revised by each company prior to publication, are given for about 2,000 companies.

For most companies, the statements printed in the Manual are the only detailed ones furnished to the public, and the Manual has thus become the only medium by which an accurate knowledge of their affairs can be obtained.

The total railroad mileage of the United States at the close of 1891 was 167,000 miles. Its cost, measured by the amount of stocks, bonds and debt, was \$10,765,026, 41. The gross earnings were \$1,138,024,459, an increase over 1890 of \$40,177,031; the net earnings, \$356,327,883, or 31.30 per cent. of the gross. For interest, \$331,329 810, and for dividends \$90,719,737 were paid. The passengers carried by all the roads aggregated \$56,015,802, about nine times as large as the population of the country. From these \$290,799,696 were received, the average charge per panel. The passengers at \$1,210,154,523 miles for all. At an average rate of 0.929 mills per ton per mile being 2.184 cents. Freight tonnage in 1891 equalled 704,308,609 tons each hauled 115,29 miles, or \$1,210,154,523 miles for all. At an average rate of 0.929 mills per ton per mile, bits traffic earned for the railroads \$754,185,910. A full report of every company contributing to the enormous aggregate is given in detail in the M. nu...1.

The price of the Manual is SIX DOLLARS—this price covering the cost of delivery in the United States and Canada.

H. V. & H. W. POOR, 70 Wall Street, New York.

ichmond & Danville R. R. Co.

(PIEDMONT AIR LINE.)

THE SHORT AND DIRECT LINE FROM

WASHINGTON, D. C., AND RICHMOND, VA.

TO ATLANTA, AUGUSTA. COLUMBIA. ASHEVILLE, RALEIGH, GREENSBORO SALISBURY, GOLDSBORO. BIRMINGHAM, MONTGOMERY, VICKSBURG. SHEEVEPORT, MOBILE, NEW ORLEANS, TEXAS. MEXICO and CALIFORNIA, MOSIGED and CALIFORNIA.

"...shington and Southwestern Vestibuled Limited Train Daily between Washington and Atlanta Without Change. Two o her through trains daily.

Pullman's Palace Buffet and Drawing-Room Sleeping Cars Without change to Atlanta, Montgomery, New Orleans, Augusta, etc.

For maps, time-tables, rates of passage, freight, etc., apply to nearest station agent of the Piedmont Air Line, r to any Railroad Agent of principal lines North or South.

W. H. GREEN, General Manager. Traffic Manager.

WESTERN MARYLAND RAILROAD.

Short Freight Line to Westminster, Frederick, Taneytown and Hagerstown, Md.; Waynesboro, Chambersburg, Shippensburg, Hasover, Gettysburg and Carlisle, Pa.; also points on the Frederick Division P. R. R., Gettysburg & Harrisburg & R. R., Harrisburg & Potomac R. R., Shenandoah Valley R. R., Noriolk & Western R. R. and connections, also route of

GREAT SOUTHERN DESPATCH.

All-rail Fast Freight Line for Southern and Southwestern points, via Bristol, Tenn. Freight received in any quantity at Hillen Station, and in carloads at Fulton, Canton and Jackson's Wharf. Shippers desiring information will be called on. Send postal card with address to

B. H. GRISWOLD, General Freight Agent, HILLEN STATION, BALTIMORE, MD.



Maslin's Patent Steam rump.

Cheapest and Best Automatic Steam Vac-uum Pump. Handles DIRTY and GRITTY LIQUIDS Without Oil or Care. Simplest and most durable Fump made, as partial removal of two botts makes every valve two botts makes every valve Contractors, Irrigation, Water Works, Railroads, Mining and General Hydraulic Purposes. Send for Circulars. JOHN MABLIN & BON, Bole Mfrs. 185-167 ist St., Jersey City, N. J.

PUMPS ANY KIND OF LIQUID.
Does not clog, freeze or get out of order.
Always ready. All brass. Every Pump
Guaranteed. 10 sizes. Capacity
100 to 10,000 gallons per
hour. Prices \$7 and upwards.
For full information write to

The VAN DUZEN & TIFT CO. CINCINNATI, O.

want the BEST, MOST EFFICI-ENT and DURABLE





RUST WELL WORKS,

WELL MACHINERY Rust's New Style. Best in Market. Quick work and no failures Send for catalogue. RUST WELL WORKS,

If you wish to keep posted on the prog-ress of the South, read the MANUFACTURERS' RECORD. Price \$4 00 a year.

Downle's Direct Double-Acting

PUMPS

For Mon-Flowing

ARTESIAN WELLS

Artesian Wells

From which a large amount o water is to be pumped.

For Railroads, Ice Factories and Villiage Water Works.

Guaranteed to lift from two
to three times as much
water from same
well and
same steam pressure as any
other pump now
in the mar-

ket.

Also Manfrs. of Direct Single-Action Steam Pumps.

your well and amount of water wanted, and write for estimates and prices.

Downie Bros. & Nevin, Limited

NEW BRIGHTON, PA.

Sole Patentees and Manufac-



WELL DRILLING MACHINERY, WILLIAMS BROTHERS, ITHACA, N. Y., Mounted and on Sills, for deep or shallow wells, with steam or horse power.

Send for Catalogue. Williams Brothers



We manufacture direct acting Duplex and Crank and Fly Wheel Steam Pumps for all services. Brass Founders and manufacturers of Brass and Iron Body goods. Straightway valves, etc. Iron Pipe and Fittings and Mill Supplies. Boiler Feed Pumps a specialty. Address THE JOHN H. McCOWAN CO. Branch House, 1425 E. Main St., RICHMOND, VA.



· Como Olk

The CRANDALL PACKING CO.

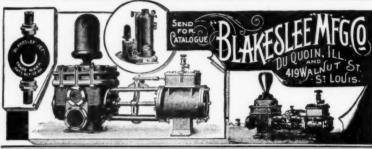
MAIN OFFICE AND WORKS: | PALMYRA, NEW YORK.
1932 North Broadway, *t. Louis, Mo.
OTHER OFFICES: | New York, 136 Liberty Street.
Chicago, 51 S. Canal Street.

Our Improved Packings for Steam, Water and Ammonia OUTLAST ALL OTHERS, because the life and elasticity of the rubber have not been impaired by the chemical action of boiling oil.

We Hold the Patent On These Packings.

Bowars of Infringements and Cooked Imitations.





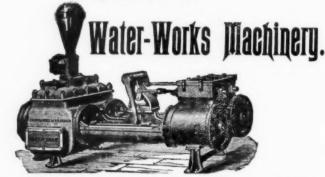






The Improved Smith & Vaile

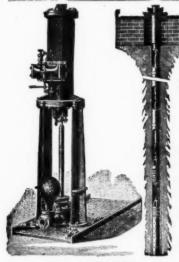
-- SINGLE, DUPLEX AND COMPOUND



The SMITH CO.

DAYTON, OHIO, and NEW YORK,

SOUTHERN AGENTS:
- - - CHARLOTTE, N. C., and ATLANTA. GA. D. A. TOMPKINS CO., MCARDLE & SINCLAIR, 50 Baronne Street, NEW ORLEANS, LA.



CAMERON STEAM

BOILER-FEEDING MINES.

REFINERIES, BREWERIES, TANNERIES. IRRIGATING,

FIRE PURPOSES. RAILROADS and FILLING TANKS. CRANK and

FLY WHEEL And VACUUM



COMPACT, DURABLE,

EFFICIENT.

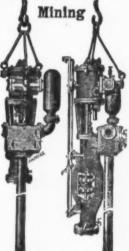
ADAPTED TO ALL PURPOSES

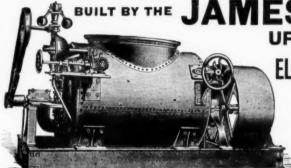
NO OUTSIDE

The A. S. Cameron Steam Pump Works,

PUMPS. Foot of East 23d Street,







UPRICHT AND HORIZONTAL

ELECTRIC, MINING & MANUFACTURING PLANTS.

Easy working gates. High percentage and even speed at full and part capacity. Equally adapted to high and low heads. Large number of sizes and styles. All parts can be furnished in duplicate. Send for fine pamphlet to

THE JAMES LEFFEL & CO. SPRINGFIELD, OR 11 LIBERTY ST., OHIO. NEW YORK CITY.

& Son, MFRS.

Subscribe to the MANUFACTURERS' RECORD Price \$4.00 a year, or six months for \$2.00

ON VERTIGAL AND HORIZONTAL SHAFTS.

Is in use all over the nation, working under heads from 4 to 100 feet driving Electric Light Plants, Cotton, Woolen, Pulp, Paper, Flour and Saw Mills.

For STRENGTH, DURABILITY and HIGH EFFICIENCY at all stages of gate IT HAS NO EQUAL. State kind of machinery to be driven, head or fall under which wheel will work, and send for illustrated catalogue and prices. Cut gearing and machinery for transmitting heavy power a specialty.

S. MORGAN SMITH.

York, Pa.



WELL SUPPLY COMPANY

ELBA IRON WORKS, CONTINENTAL TUBE WORKS, and Six other Manufactories Making

WROUGHT IRON STEAM, LINE AND DRIVE PIPE, TUBING, CASING, BOILERS, ENGINES, DRILLING RIGS. Tools, ROPE, and all other appliances necessary for drilling Oil, Gas and Water

ARTESIAN WELLS.

PITTSBURGH, OIL CITY and BRADFORD, PA.

32 CORTLANDT STREET, NEW YORK. Advertise in the Manufacturers' Record.

Improved Success Turbine THE FRED. J. MEYERS MFG. CO.

WROUGHT-IRON FENCES, ROOF CRESTING, JAILS

Wire Bank and Office Railing, Wire Window Guards

AND EVERY DESCRIPTION OF WIRE WORK.

Send for illustrated catalogue.

OFFICE AND WORKS, 419, 421 and 423 MADISON STREET. COVINGTON. KY.



CHAMPION IRON CO. KENTON, OHIO.

SPECIALTIES.—Iron Stairs and Jail Work, Builders' and Ornamental Iron Work and the only manufacturers of Malleable Iron Cresting guaranteed against breakage. Largest Iron Fence and Railing Works in United States.

Prest, & Mgr. John Bird, 2nd, V.-Prest, & Supt. A. J. Copy
THE CUSHMAN IRON CO.

Architectural and Ornamental Iron Works,

BRIDGE RAILINGS, FENCES, FIRE ESCAPES, BEAMS, CHANG Selling Agents for Engines, Boilers, Elevators, Wire Rope T Iron and Steel Siding and Roofing, Etc. NNELS, GIRDERS, &C. Tramways, Wire Rope, ROANOKE, VA. OFFICE-Commercial Bank Building. WORKS-West End.



* STABLE FITTINGS *

BANK AND OFFICE RAILING,

Wire and Iron Fencing, Roof Cresting, Stable Fittings, Wire Elevator Enclosures, Fire Escapes and Structural Iron and Wire Work. TOLEDO WIRE & IRON WORKS, - - Toledo, Obio.

THE GRINNELL AUTOMATIC SPRINKLER

Recently Modified. Especially Constructed to Resist the Effects of Adhesive Corrosion or Sediment, both Inside and Outside the Sprinkler.

FOR INFORMATION AND PROPOSALS AFFLY TO PROVIDENCE STEAM & CAS PIPE CO., Providence, R. I.

BOSTON OFFICE, 173 Devonshire Street. CHICAGO OFFICE, 115 Monroe Street. AUTOMATIC FIRE ALARM & EXTINGUISHER CO. (Limited),
BROADWAY, NEW YORK. PHILADELPHIA OFFICE, 49 S. Fourth Street. 418 BROADWAY, NEW YORK.

Members Baltimore Stock Exchange.

WM. B. OLIVER.

MIDDENDORF, OLIVER & CO. BANKERS AND BROKERS,

No. 213 E. German Street,

[KEYSER BUILDING.]

Baltimore, Md.

Stocks and Bonds Bought and Sold on Commission. Special attention given to Municipal and other Investment Loans. Dealers in Foreign Exchange. Drafts on Europe and Letters of Credit furnished.

L. Breckinridge Cabell,

53 Broadway,

NEW YORK.

Room 17.

Lands, Securities and Industrial Enterprises; Total Issues of Corporate, Municipal and County Bonds Taken; Municipal Debts Consolidated and Refunded at lower rates; Railroads Built and Equipped; Electric Roads Built and Equipped; Street Railroads using horse-power Changed to Electric Roads.

GRANDSALE

OF LOTS.

ROCKY MOUNT,

NORTH CAROLINA.

NOVEMBER 3, 1892.

REDUCED RATES ON RAILROADS.

FOR INFORMATION ADDRESS

Rocky Mount Improvement and Manufacturing Co.

Rocky Mount, North Carolina.

J. H. LOGAN, General Manager.

ARRINGTON & ARRINGTON, General Agents

INVESTORS,-Attention is called to induce

CLAREMONT, VA.

on for Factories, Mills, etc. Situate s river (deep warer). Address

Claremont Citizens' Improvement Committee.

GOLD, COPPER, SILVER TIN, WANGANESE COAL, NICKEL, IRON, ASBESTOS, ASBESTOS, LITYOGRAPHIC STONE, SYPSUM, DOL MITE, SBAPSTONE, PHOSPHATE

OF LIME,

For Sale.

GEO. A. HYDE.

Real Estate in all Branches. J. R. HOWARD, C.E. S. J. DAVENPORT M.E.

SALE OF MINES, Mineral, Timber and Quarry Lands, LAWRENCE BUILDING,

Rooms 16 and 17, 615 and 617 14th Street, WASHINGTON, D. C.

SELLERS

of anything that is required by Machinists. Foundrymen, Iron Manufacturers, Coal and Iron Ore Miners. Textile Manufacturers, Woodworkers and

Artisans of every class can

reach more customers

through the

MANUFACTURERS' RECORD

than in any other way. BALTIMORE, MD.

BUYERS

of Machinery, Tools, Mining and Manufacturing | Enterprises to locate at Supplies, can find anything they need by referring to the advertising pages of the

MANUFACTURERS' RECORD.

THE SOUTH BALTIMORE HARBOR & IMPROVEMENT COMPANY.

THE SOUTH BALTIMORE HARBOR & IMPROVEMENT CO. is the owner of about 1,500 acres of land and five miles of water front adjoining the city of Baltimore, on the south side of the Patapsco river.

The land is beautifully located, running from the water's edge, gradually to a height of about 200 feet; is free from malarial influences, and is generally considered one of the healthiest locations adjoining the city.

WATER FRONT.

The center of the water front consists of the famous land-bound harbor of Curtis Bay, with an average depth of water of 25 feet.

MANUFACTORIES.

The advantages of this locality for manufacturing purposes cannot over-estimated. The best proof of this assertion is that capitalists ve within the last few years selected it in preference for large manufacturing enterprises, such as a Sugar Refinery, Barrel Factory, Carorks, Found y, Nut and Bolt Manufactory, the Ryan-McDonald schine Shoos, which were removed from Waterloo, N. Y.; the Becketh Rolling Mills, which were removed from Paterson, N. J., besides ters now in contemplation of erection.

LABOR.

The great advantage of this place as to labor, is the town of SOUTH BALTIMORE, adjoin ing the factories, containing hundreds of substantial brick houses, for the employees of this evarious works (There are now being built by the Company, as well as by others, blocks of houses, in addition to the above.)

BALTIMORE & OHIO R. R. CO.

The Baltimore & Ohio Railroad runs through this property, and has a terminus at Curtis Eay.

ELECTRIC RAILWAY.

An Electric Railway is now completed from the City of Baltimore the Sugar Refinery (near the southern limits of this property), the fau upon which will be only five cents, the cars to be run every ten minure and thereby making it a part of Baltimore City, as well as easy of access at all hours.

The town contains a Presbyterian, a Catholic, a Methodist, a Baptist and an Episcopal Church.

BUILDING LOTS.

Capitalists and Builders to 'rect houses in this growing town, both for sale or to rent, will find a rare opportunity for investment; as the demand for houses is greater than the supply.

The Company wil sell or lease water fronts, or lots for manufacturing and for dwelling purooses, at moderate rates.

Manufacturers will find it to their interest to examine this property before locating elsewhere.

For particu'ars and prices, apply to

WILLIAM S. RAYNER, President,

No. 8 East Lexington Street. BALTIMORE, MD.

Manufacturers

Contemplating a move South should "look up" Columbus City, Ala. Its natural resources make it the ideal spot of the South for an industrial city. Its promoters will deal as liberally with manufacturers as nature has dealt with the city.

If you are contemplating a move South, place yourself in communication with the Southern Industries Co., agents for Columbus City Mining, Manufacturing & Development Co., 1 Beacon Street, Boston; 85 Pulitzer Building, New York City; 152 La Salle Street, Chicago; 617 14th Street, Washington; 504 Richardson Building, Chattanooga, Tenn.; 673 Elm Street, Manchester, N. H.; 107 Olive Street, St. Louis, Mo.

Columbus City: \$100,000 National Bank, capital all paid in; Smelting Furnace-Weaver & Rogers Co., Chicago, Ill.; Car Works-Harris Car Co, Woolen Mills-Reynolds Bros., Davisville, R. I.; Brick Manufacturing Co .-Messrs. Baker, Cavanaugh & Verrill, Holyoke, Mass.; Electric Light Company— Gatcomb Bros. & Co., Milling and Supply Co .-C. C. Milling & Supply Co., Furniture Factory-G. H. Stevens & Co., Chicago, and contracts closing with other industries daily.

Coal

The best and cheapest coal is found along the line of the Baltimore & Ohio Railroad.

Timber

Large bodies of timber are offered at low prices along the Baltimore & Ohio Railroad.

Iron

Iron ore of high grade and in unlimited quantity underlies the territory reached by the Baltimore & Ohio Railroad.

Oil

West Virginia, Ohio and Pennsylvania are rich in oil fields, the best of which are on the Baltimore & Ohio Railroad.

Gas

Natural gas wells along the Baltimore & Ohio Railroad are the strongest yet known.

Water

Good water-powers can be se cured at low cost and within easy distance of the Baltimore & Ohio Railroad.

Labor

Cheap, desirable and honest labor is abundant along the Baltimore & Ohio Railroad.

Farms

Can be purchased at low price and upon easy terms along the line of the Baltimore & Ohio Railroad.

Markets

The best markets are quickly reached by the Baltimore & Ohio Railroad.

Manufacturers

Receive special inducements to locate along the Baltimore & Ohio Railroad.

Correspondence solicited.

M. V. RICHARDS.

Land and Immigration Agent B. & O. R. R.

BALTIMORE, MD.

FREE SITES

MANUFACTURERS!

00 YOU wish a better location for your plant than the one you occupy at present?

py at present?

DO YOU desire factory sites and buildings erected after your own plans and specifications as a donation?

WE OFFER YOU a choice of locations in ILLINOIS, OHID, INDIANA, & also in the cities of (HICAGO, MMLMAUKEE, STPAUL, DULUTH, &, with lowest freight rates to and from all points ADDITIONAL CAPITAL ALSO PROURED WRITE FOR PARTICULARS

REFERENCES GIVEN UPON REQUEST. P. S. MORDAUNT (*)
HANDER OF COMMERCE BLOG, CHICAGO
WIND MATIONAL RANK BLOB, CINCINNATION.



A. HOEN & CO.

Engravers and Lithographers,

RICHMOND, VA.

Furnish high class Aristic Work in BONDS, CERTIFICATES OF STOCK, COMMERCIAL STATIONERY, And make a specialty of

SHOWCARDS, LABELS

AND COLOR WORK GENERALLY
Write for Samples and Prices.

STIEFF

UPRIGHTS, GRANDS AND SQUARES.

Highest grade Instruments manufactured. Endorsed and preferred by the best schools and musical authorities. Only Upright Piano on the market to day equal to the Grand. Reasonable terms. Old pianos taken in exchange. Pianos for; rent. A large assortment of Organs constantly on hand. Send for illustrated piano and organ ca'alogue. Inducements on secondhand Pianos.

Tuning promptly attended to.

CHARLES M. STIEFF.

Warercoms: Baltimore, 9 N. Liberty Street; Chicago, 178 Wabash Avenue; Philadelphia, 1204 N. 5th Street; Washington, 417 11th Street, N. W.

PIANOS and ORGANS.

More than 250,000 ESTEY ORGANS in use

PIANOS,

Weber, Decker Bros., Estey, Fischer and Ivers & Pond.

The Leading Instruments of the World

SANDERS & STAYMAN,

No. 13 North Charles Street, BALTIMORE, MD. To Manufacturers of Hardwoods,

To Manufacturers of Brick,

To Manufacturers of Cotton,

To Prospective Manufacturers Looking Toward the South to Locate, and

TO CAPITALISTS.

WASHINGTON, LA.

A CITY OF 1,800 PEOPLE.

Offers More Practical and Substantial Inducements Than Any Other Town in the South.

First.—At the very doors of Washing'on are VAST VIRGIN FORESTS of Hickory, Oak, Walnut, Magnolia, Cypress, and every variety of the Finest Hardwoods, so easy of access that Black Walnut and Hickory are cut for cordwood. The forests are practically inexhaustible, extending for 100 miles along the Bayou Courtableau, Boyou Cocodrie and Bayou Bouef, upon which waterways Washington is situated. Magnificent opportunities for hardwood manufacturing exist at Washington.

Second.-Washington already possesses such industries as:

A Large Cotton Factory (cost \$50,000)

A Saw Mill.

A Drain Pipe and Tile Works.

A Steam Brick Mill.

An Oil Factory.

Three Cistern Factories.
A 100-saw Cotton Gin.

A Sash and Blind Factory.

Fifteen Large General Stores.

Churches, Schools and every advantage of an old-established town.

Third—Washington is AT THE HEAD OF NAVIGATION of Bayou Courtableau, and enjoys cheap transportation by water to New Orleans, the East and West, and low freights by both water and rail via the Southern Pacific Railway, which runs through the town. The cost of raw material and the fit ished product is thus reduced to a minimum, and the saving on Northern and Western freights alone make a profit of 10 to 25 per cent. to manufactories located here.

Fourth,—Washington is situated in St. Landry Parish, adjoining the famous Teche Sugar Country, and every diversity in crops is grown. Some of the largest sugar plantations in Louisiana adjoin Washington, and rice, cotton, corn and oats yield enormous crops.

Fifth.—Labor in abundance is available for small manufacturing plants at very low cost.

WASHINGTON INVITES INQUIRIES.

For Detailed Information Regarding Its Advantages and Inducements for New Industries.

Address

LEON WOLFF, Mayor,

WASHINGTON, LA

PORTH WILKESBORO.

One of the Conspicuous Successes of the Year in Town Building, Presents the Following Record:

> Population March 4, 1891, actual count, Population March 4, 1892, actual count, 348.

> > Gain in one year 625 per cent.

Townsite purchased November 11, 1890; act of incorporation passed by the Legislature, March 4, 1891; first lot sold at private sale, May 12, 1891. Within the first year of its existence ten miles of streets have been graded, and \$22,000 spent in public improvements. Where prior to March 4, 1891, there was only a farm settlement without pretensions to being even a village, there is to-day a thriving, busy, growing, trading and manufacturing center, with

A Large Well-Kept Hotel, The Bank of North Wilkesboro, \$40,000 Capital, A large Livery and Sale Stable, Two Large Wholesale Stores, One Hardware Store, One Furniture Store, Ten General Merchandise Stores, Three Saw Mills, Sash and Blind Factories, One Foundry and Machine Shop, A Handsome, Well-Edited, Home Print Newspaper, The North Wilkes-

boro News, One School.

Two Churches Under Way,

Two Brick Yards in operation, and a number of other enterprises practically

Arrangements are about completed for a Woolen Mill.

A large iron front brick block, containing Bank Building, two Store Rooms, Opera House, and Printing Office; A graded School Building and an Iron Bridge across the Yadkin River, in the Eastern part of town, will be completed during the spring and summer.

Turnpike roads to Tennessee and Virginia are about completed; county roads leading into town are being improved and numerous good new ones built, with the intention of making this the center for all the wagon trade of this section.

A tobacco warehouse for the sale of the high grade leaf of this district will be built during the summer, so as to give a home market for the tobacco crop that will be grown this year.

Compare this record with that of any other new tow you have heard of during the past dull season.

NORTH WILKESBORO,

Is 75 miles west of Winston-Salem, at the present terminus of the Northwestern North Carolina Railroad, which when ultimately completed to Bristol, Tenn., will give the shortest route between Norfolk and Cincinnati. North Wilkesboro is the most important trading point between Winston-Salem and Bristol, and is in the center of the great undeveloped mineral and timber district of Northwestern North Carolina, being by United States Postal Map on an air line 75 miles southeast of Bristol, 45 miles east of Cranberry, N. C., 40 miles north of Statesville, 45 miles northeast of Hickory, 90 miles northeast of Asheville, 45 miles southeast of Mt. Airy, and 80 miles south of the Norfolk & Western Railroad, in the valley of the Yadkin, between the Brushy Mountains on the South and the Blue Ridge on the North. Climate, healthfulness, water, drainage and location unsurpassed by any town in North Carolina.

The townsite consists of 1,088 acres, located, by the way on a farm originally owned by General John B. Gordon's grandfather. The first public auction sale of lots was held December 2, 1891, and 188 lots were sold. Purchasers have in many cases been able to resell at a handsome profit. The company has sold 50 lots at private sale since then, on many of which houses are now being erected. It is a significant fact that among the business buildings erected a large per cent. are substantial brick structures, while for architectural beauty and cost many of the residences are much superior to those usually found in a town so young.

At the second auction sale, May 11th, 1892, 35 business lots and 44 residence lots sold for \$16,490, an average of \$8.35 per front foot, which is \$2.53 per front foot (or 44 per cent.) more than the average at the sale last December, which was the best sale made in North Carolina during last year. Since the sale, a contract has been closed for the location of another large saw mill, plaining mill, sash, door and blind factory combined, which will do a large shipping business. A contract is closed for the location of extract works with a capital stock of \$300,000. The plant will cost \$125,000 and will cover six acres of land. Twelve families from the North will move down. The company will erect a large electric-light plant in connection with the extract works. North Wilkesboro will get there and will not be long doing so.

Through the townsite runs a stratum of serpentine stone, 200 feet in width, and also a bed of iron ore equal in quality to that of Cranberry. The Town Company also owns 4,100 acres of mineral, granite and timber lands in Wilkes County. It is probable that the work of developing the great mineral and timber interests of the section will be commenced in a short time, and on an extensive scale.

Sites will be donated and stock subscribed to such manufacturing enterprises as may be advantageously located here.

The policy of the Company is a most liberal one in this respect, it being determined to aid all legitimate enterprises to any reasonable extent. There are 328 miles of water courses within the borders of Wilkes County, furnishing to the vicinity of North Wilkesboro a water power as great as Fall River. The climate, while not moist, is neither harsh nor dry, and is especially suitable to the spinning of fine cotton yarns, such as cannot be made in the extreme South or North. There is also a fine opportunity here for bleacheries, to the establishment of which at Southern points there is a tendency at present. As they can't go where sluggish streams, impregnated with vegetable matter, abound, the quick flowing streams of clear mountain water, so numerous about North Wilkesboro, afford everything desired. Numerous other industries will do well at North Wilkesboro, and will be most substantially encouraged to locate there. substantially encouraged to locate there.

Capitalists, Home Seekers, Health Seekers, Manufacturers of wood and iron, and many other industrial workers may well investigate North Wilkesboro's advantages.

The above-described townsite and other property belongs to the Winston Land & Improvement Co., which was chartered by act of Legislature, session of 1887; ratified March 4, 1887, chapter 82. Authorized capital \$1,000,000. Present capital stock \$125,000, all subscribed and paid up.

OFFICERS—G. W. HINSHAW, President, of Hinshaw & Medearis, Wholesale Merchants; Vice-President People's National Bank, Winston, N. C. DR. W. L. BROWN, Vice-President, of Brown Brothers, Tobacco Manufacturers, Winston, N. C. W. F. TROGDON, Secretary and Treasurer, North Wilkesboro, N. C. BOARD OF DIRECTORS—GEO. W. HINSHAW, Winston, N. C. MAJ. CHANNING M. BOLTON, Chief Engineer Richmond & Danville Railroad, Washington, D. C. P. H. HANES, of P. H. Hanes & Co., Tobacco Manufacturers, Winston, N. C. COL. J. M. WINSTEAD, Cashier Piedmont Bank, Greensboro, N. C., and President H. P. Scales Tobacco Co., Atlanta, Ga. A. A. FINLEY, ESQ., Mayor of North Wilkesboro, N. C.

ATTORNEYS—T. B. FINLEY, ESQ., North Wilkesboro, N. C. HON. C. B. WATSON, Winston, N. C. HON. J. C. BUXTON, President First National Bank, Winston, N. C. HON. W. W. BARBER, Wilkesboro, N. C.

PLATS, PRICES AND ANY DESIRED INFORMATION PROMPTLY FURNISHED ON APPLICATION TO

W. F. TROGDON, Secretary and Treasurer,

NORTH WILKESBORO, N. C.

As A LOCATION for Manufactures

Of Iron and Wood and for General Industrial and Business Enterprises,

FRONT ROYAL, VA.

INVITES INVESTIGATION.

Its location, at the junction of the Norfolk & Western Railroad (Shenandoah Valley line) and the Richmond & Danville's branch, give it excellent transportation facilities. It is only a few hours' ride distant from Washington.

The Norfolk & Western's direct line to Washington will be built from Front Royal.

There is no Finer Agricultural Country in the World than the Famed Shenandoah Valley, in which Front Royal is Located.

A WIDE RIVER WITH SWIFT CURRENT FURNISHES WATER POWER AND MAKES DRAINAGE PERFECT.

Front Royal is a Prosperous Town, with an Extensive Mercantile Business and Many Manufacturing Enterprises in Operation and Under Construction.

INVESTIGATION OF ITS ADVANTAGES IS INVITED BY THE

Front Royal--Riverton Improvement Company,

Alphabetical Index of Advertisers.

A
"A. W. Z." 23
Acme Roofing Co 31
Adams, John N
Adams & Woodson 6
Ajax Iron Works 19
Akron Tool Co
Alcott, T. C., & Son 41
Alford & McCarthy
Allfree, The J. B., Mfg. Co 48 Allis, The Edw. P., Co
Alsing, J. R., Co 14
American Bridge & Iron Co 8 American Engine Co 23
American Engine Co 23 American Hoist & Derrick Co 4
American Imp. Anti-Friet. Met. Co. 13
American Ore Machinery Co 14 American Screw Co 48
American Supply Co
American Well Works 40
Amweg, Fred'k J 6 Anderson Fdy. & Machine Works 32
Armitage-Herschell Co 30
Arnold Metal Wheel Co 33
Arnold, G. W
Atkins, E. C., & Co
Atlas Mfg. Co
Ault & Wiborg Co
Avery Supply Co 27
В
Babcock & Wilcox Co 19
Balderston, H., & Son
Baldwin Locomotive Works 13 Baltimore Engraving Co 39
Balto. Malleable Iron & S. C. Co 13
Baltimore Storage & Light, Co 38 Barnes, W. F. & John, Co 12
Barrath, Edward, & Co
Bason, Geo. T., etc., Trustees 26
Bass Foundry & Machine Works 26 Bates, Jas 8
Bauer, A. G
Bay Line
Beach, H. L
Belden Machine Co 8
Bell, David 8 Bement, Miles & Co 12
Bentel & Margedant Co
Berger Bros 31
Berger Mig. Co
Bertolette, Chester, & Co. 24 Bickford, H. 48 Bishop, Thos. F., & Co. 8 Blakeslee Mtg. Co. 40 Boggs & Clarke. 40
Blakeslee Mfg. Co40
Roggs & Clarke
Bolles, J. E., & Co
Bottiger, Gustaf 6 Bradley & Co. 12 Bradley Fertilizer Co. 15
Bradley Fertilizer Co
Brennan & Co
Brewer, H., & Co
Bristol's Mfg. Co
Brown Hoist, & Con. Machine Co. 2 Brown & King Supply Co 34
Brunswick Terminal Co
Buckeye Engine Co
Bullock, M. C., Mfg, Co
Burns Mfg. Co
Burnham Bros. 41 Burns Mfg. Co. 30 Burr, A. T. Jr. 24 Burton Machine Co. 25 Byers, Jno. F., Machine Co. 17
Byers, Juo. F., Machine Co 17
Cabell, L. Breckinridge
Caldwell, H. W., & Son Co 35
Cabell, L. Breckinridge 26, 42 Caldwell, H. W., & Son Co. 35 Calhoun & Co. 0 Cambridge Roofing Co. 31 Cameron, A. S., Steam Pump Wks. 41 Cameron & Barkley Co. 11 Canton Steel Roofing Co. 3 Cardwell Machine Co. 3 Cardwell Machine Co. 3
Cameron & Barkley Co 11
Cardwell Machine Co
Champion & Champion
Champion Iron Co
Carries, George 32 Central Machine Works 33 Chambers Brothers Co 32 Champion & Champion 23 Champion Iron Co 41 Chandler & Taylor Co 85 Charleston Lead Co 11 Chase, John C 5 Chattanoora Fdv & Pine Works 20 Chattanoora Fdv & Pine Works 20
Chase, John C
Chesapeake Belting Co
Chester Steel Castings Co
Cincinnati, Hamilton & D. R. R 38 Cincinnati Corrugating Co 31
Cincinnati Tool Co
Claremont, Va
Clark, Geo. P
Clay, The Oliver P., Co
Cleveland & Hardwick
Cleveland Twist Drill Co
Coaldale Brick & Tile Co 8
Coates, Ernest
Champion Iron Co
Collins & Hackett

abelical	0
Columbus City, Ala 42	
Colville, Fulton	
Comstock, Geo. S	
Comly, Geo. N	
Copeland & Bacon 17	
Cordesman, Meyer & Co 36 Corporation Book Co	
Corres. School of Mechanics, The. 9	
Cortright Metal Roofing Co 31	
Covert Mfg, Co 10 Crandall Packing Co 40	
Crescent Mfg. Co 24	
Crompton Loom Works 34 Cronk Hanger Co *	
Crown Smelting Co 16	
Cummer, F. D., Sons Co 16	
Curran, Jas. H 8	
Cushman Iron Co 41	
Cyclone Pulverizing Co 14	
D	
Dake Engine Mfg. Co 20 Davidson Ventilating Fan Co 48	
Day, J. H., & Co *	
Dean Bros. Steam Pump Works 40	
Dederick P. K., & Co * Delbert Engineering Co., Ltd 21	
Definer Engineering Co., Ltd 21 Deming Co 40	
Dempwolf, C. H., & Co	
Derby & Kilmer Desk Co 23 Dewey, Frederic P 6	
Dixon, Jos., Crucible Co 48	
Dodge & Sons 23	
Dolph, A. M., Co	
Downie Bros. & Nevin 40	
Draper, Geo., & Sons 22	
Draper Machine Tool Co 12 Draper, T. Waln-Morgan 6	
Drew, Baldwin & Co	
Dudley, S. A 34	
Dudley, W. W., & Co	
Dunning, W. D 15	
Duvinage, P., & Co 23	
E Eagle Boiler Works 19	
Edbrooke, W. J 24	
Edmond, H. P 19	
Egan Co., The	
Elier, J. H., & Co	
Emerson, Smith & Co 37	
Empire Paint & Roofing Co 31 Employers' Lia, Assur, Cor., Ltd., 22 Enterprise Boiler Co 19	
Enterprise Boiler Co	
Evans, George A	
12	
Fitzsimons & Co. * Fletcher & Thomas 32 Foos Mfg. Co. 29 Forrest Silver Bronze Packing Co. 9	
Foos Mfg. Co	
Porsaitti, S. C., Machine Commercial	
Foster, R. M	
Frey-Sheckler Co	
Frescoln, S. W	
Frisbee Lucop Mill Co 14	
Froehling, Dr. Henry	
Fostoria Steel Roofing Co. 31 Frey-Sheckler Co. 32 Freese E. M. & Co. 32 Freese E. M. & Co. 32 Fresco E. M. & Co. 32 Frisker Co. 18 Friske Lucop Mill Co. 14 Fritz, George J. 34 Froehling, Dr. Henry. 6 Frontier Iron Works. 37 Furness Line. 38	
Gambrill, C. A., Mfg. Co. 39 Gamdy Belting Co. 11 Garrield Injector Co. 27 Gates Bros. & Sharp. 8 Gates Iron Works. 14 General Electric Co. 47 Gibbes, W. H., Jr., & Co. 6 Gamorgan Co., The. 29 Glascock & Co. 18 Gamorgan Co. The. 38 General Electric Co. 48 Glamorgan Co. The. 37 Jobe Iron Roofing & Cor. Co. 31 Jobe Iron Roofing & Cor. Co. 31 Jode Machine Works 19 Jodfrey & Train 23	
Gambrill, C. A., Mfg. Co	
Garfield Injector Co	
General Electric Co 47	
General Electric Co	-
Hascock & Co	-
lobe fron Roofing & Cor. Co 31	
iode Machine Works	7
Finley & Finley Iron Works 20 Foodell & Waters *	,
raham, J. S., & Co	1
rand Rapids Wheelbarrow Co 33 rant Corundum Wheel Mfg. Co 34	
raves Elevator Co	***
Finder Fond Works 20	7
	9.19
**	2. 2.
lackney Hammer Co. 12 laden, C. J. 23 laight & Clark. 4 laines, Jones & Cadbury Co. 27 larrington, E., Son & Co	2.5
laight & Clark 4	7
farrington, E., Son & Co 27	10.00
Jarrington & King Perforat'g Co., 2	
Jarris, N. W., & Co	2. 2. 2. 2.
Hartford, R. F	7.7
& Insurance Co	2.0
& Insurance Co	2000
Heffernan, Wm. A	3

"CLASSIFIED INDEX" SEE PAGES 3, 5
Hine & Robertson
Hoen, A., & Co 43
Hogue, John S 24
Holmes, E. & B 36
Holmes, John
Holyoke Steam Boiler Wks 20
Hoopes & Townsend Co 12
Hopkins, Dwight & Co 27
Hopkins, E. M 25
Horner, William 27
Houghton, A. N 43
Houston, Stanwood & Gamble 18
Howard Fdy. & Machine Works 33
Howard-Harrison Iron Co 29
Howard Hydraulic Cement Co 4
Hundley Bros. & Co 24
Hyde, Geo. A 42
1
Indiana Machine Works 37
Ingersoll Milling Machine Co 12
Ingersoll-Sergeant Rock Drill Co 2 International Ry. Equip. & Sup. Co. 25
International Ry. Equip. & Sup. Co. 28 Iron Masters' Laboratory
J
Jackson, Luis, Industrial Commr 38
Jeffrey Mfg. Co 11
Jemison, W. C 25
Jenkins Bros9, 48
Johns, H. W., Mfg. Co 21
Jones, B. M., & Co 4
Jordan & MacLeod 6
Jory & Co 27
Judd 24
K
Kane, Thos., & Co 19
Kanneberg Roofing Co
Kehrhahn & Co 20
Kells & Sons *
Kelly Bros 20
Kelly, O. S., Co 16
Kennedy, Julian 8
Kilburn, Lincoln & Co 34
Kingan & Co 10
Kinnear & Gager Co 31
"Knitting Mill." 24
L
Lackawanna Lubricating Co 9
Laidlaw & Dunn Co 40
.ake, J. H. & D., Co
Lancaster, Jas. H
edoux Chemical Laboratory 6
emon, George E
offet las & Co
.effel, W. C., Co
.eonard, H. Ward, & Co 9
idgerwood Mfg. Co 4
inham Dado Machine Co
ink-Belt Engineering Co 11
lovd Booth Co
ockwood, Greene & Co 6
ombard, Geo. R. & Co.
one Star Plaster Co 4
ong & Allstatter Co 12
ouisville Fire Brick Works 48
owell Machine Shop 34
adlow-Saylor Wire Co
udlow Valve Mfg. Co 20
effel, W. C. Co
M
Machine Shops"
Jagnesia Sectional Covering Co 22 Jain Belting Co 27
fanly Machine Co 24
Iansfield, H. H
Iales, A. S., & Co 25
Iarion Steam Shovel Co 2 Iaris & Beekley 9
1armaduke, W. W
larston, J. M., & Co * laslin, John, & Son 40
laslin's 24
IcClure & Maxwell
IcEwen, J. H., Mfg, Co 20
IcGowan, John H., Co 40
IcKaig Iron & S. Shatting Wks 29
lerchant & Co.
lerchants & Miners' Transp. Co 38
levers Fred I Mfg Co
lezger, C. Ad
liddendorf, Oliver & Co 34
liller Safe & Iron Works
innigerade Wm
litchel, S. L48
loler, J. D. & Wm. G
loore & White Co
ordaunt, F. S., Co
lorris Machine Works 20
orse, Williams & Co
oss, R. F 23
osser, W. F., & Son 14
Lakepeace, C. R. & Co. 6 Lales, A. S. & Co. 25 Larion Steam Shovel Co. 25 Larion Steam Shovel Co. 25 Larion Steam Shovel Co. 26 Laris & Beekley 9 Larmaduke, W. W. 25 Larston, J. M. & Co. 8 Laslin, John, & Son 40 Laslin S. 24 LeCandless, John M. 6 LeClure & Maxwell. 23 LeEwen, J. H. Mfg. Co. 20 LeGowan, John H. Co. 40 LeGrew, H. H. 24 LeKaig Iron & S. Shatting Wks. 29 LeCanahan & Stone. 27 Lerchant & Co. 27 Lerchant & Co. 38 Ley, F. H. C. 9 Leyers, Fred, J. Mfg. Co. 41 Lezger, C. Ad. 6 Lichlgan Emery Wheel Co. 34 Liddendorf, Oliver & Co. 37 Litchel, S. L. 35 Lorore & White Co. 45 Lorore & White Co. 45 Lorore & White Co. 46 Lordrount, F. S., Co. 46 Lordrount, F. S., Co. 47 Lorore & White Co. 48 Lordrount, F. S., Co. 45 Lordrount, F. S., Co. 45 Lordrount, F. S., Co. 45 Lordrount, F. S., Co. 36 Lorris Machine & Lron Co. 20 Lorse, Williams & Co. 23 Lorse, W. F., & Son. 14 Lueller, H. Mfg. Co. 29 Lunson Bross. 10
10

National Machinery Co 1	1
Neracher & Hill Sprinkler Co 2	
New England Vent. & Heat. Co 4	
New Process Twist Drill Co 3. New York Belt'g & Pack'g Co., Ltd. 11	
New York Belt'g & Pack'g Co., Ltd. 1. New York Central Iron Wks. Co 4	
New York Domestic Gas Mch. Co. 39	
New York Equipment Co	
New York Machinery Depot 25	
New York Safety S. P. Co 18 Niagara Stamping & Tool Co 12	
Niagara Stamping & Tool Co 12 Nicholson File Co 4	
Nordyke & Marmon Co 22	3
North American Metaline Co 9	,
North Wilkesboro, N. C 44	
Northampton Emery Wheel Co 34 Norton Emery Wheel Co 34	
Nugent, Perry 24	
Nye & Tredick *	
0	
Oakley & Keating 29	
Oher Lathe Co	
Oil Well Supply Co 41	
Otis Bros. & Co 33	
Otto Gas Engine Works 22	
Owen & Margeson 30	
Pancoast & Maule 29	
Pearson, H. J	
Penberthy Injector Co	
Penfield, J. W., & Son 32	
Pennsylvania Machine Co., Ltd 25	
Pennsylvania Steel Co	
Philadelphia Eng. Works, Ltd *	
Philadelphia Metallurgical Works. 6	
Phosphor-Bronze Smlt. Co., Ltd 8	
Photo-Electrotype Engraving Co * Piedmont Air Line	
Piedmont Air Line	
Pittsburg & Lake Erie Railroad 38	
Place, George 25	
Place, George, Machine Co 25 Planing Mill 24	
Planing Mill 24 Plaza Hotel 26	
Poole, Herman 8	
Poor, H. V. & H. W 39	
Popham, Henry, & Son	
Porter, H. K., & Co	
Potts, C. & A., & Co 32	
Powell, Wm., Co *	
Prentiss Tool & Supply Co 25 Providence Steam & Gas Pipe Co 41	
Pryibil, P	
Q	
Queen & Crescent Railroad 38	
Queen City Supply Co 10	
R	
Radford Pipe & Foundry Co 29	
Rand Drill Co	
Raymond Bros. Impact Pulv. Co 14	
Raymond, C. W., & Co 32	
Read, Chas. H., Jr	
Reeves, Paul S	
Richards, Ernest V 29	
Richards, M. V	
Richardson, C. F	
Richmond Loco, & Mch. Wks 12	
Roanoke Mineral Wool Co 30 Robins, A. K., & Co 27	
Robinson & Orr	
Rochester Machine Tool Works 8	
Rockford Electric Mfg. Co 47 Rocky Mount, N. C 42	
Ross, Josiah * Rowley & Hermance Co 36	
Royal Mfg. Co	
Roanoke Mineral Wool Co. 30 Robins, A. K., & Co. 27 Robinson & Orr. 25 Robinson, Wm. C., & Son. 35 Rochester Machine Tool Works. 8 Rockford Electric Mfg. Co. 47 Rocky Mount, N. C. 42 Ross, Josiah * Rowley & Hermance Co. 36 Royal Mfg. Co. 23 Rust Well Works 40 Ryan-McDonald Mfg. Co. 17	
s	
Safety Elevator Brake Co 8	
Sampson, T. H	
Sampson Cordage Works * Sanderson, John	
Sanders & Stayman	
Saunders, D., Sons	
Schubert & Co	
sebastian Lathe Co 12	
sebastian-May Co	
Sharon Boiler Works * Shepard, H. L 9	
Sherwood Mfg. Co	
Shoemaker, A. T	
sharon Boiler Works	
silver Mfg. Co	
simpson Electric Mfg. Co	
Sims Mrg. Co	
Strations Want 1	

16	Couls Comm. Product
	Soule Steam Feed Works 26
27	South Baltimore H. & I. Co 42
47	Southern Banks 23
33	Southern Cotton Oil Co 25 Southern Emery Wheel Co 34
47	G
39	Southern Equipment Co 16 Southern Fire Brick Works
2	
25	Southern Information Bureau 23 Southern Iron & Equipment Co 25
18	Southern Lumber Directory 26
13	Southern Pacific Co 38
	Southern Real Estate Directory 26
22	Southern Saw Mfg. Co 2
9	Spencer, L. E., Chairman, etc 24
14	Sprout, Waldron & Co
54	Stafford, E. H., Co
14	Standard Coal Co 17
14	Standard Steel Works 27
	Starrett, L. S
19	C. 1 . C. 2 . 2 . 2 . 1
6	Steel Rail Supply Co 25
4	Stein, Walter M 6
1	Stevens, Arthur L 6
3	Stevens's, Henry, Sons 48
2	Stieff, Chas. M 43
0	Stilwell & Bierce Mfg. Co 21
	St. Louis Steel Wire Brush Co 2
9	Stow Flexible Shaft Co., Ltd 9
4	Stow Mfg. Co 9
8	Streeter, Alvin
2	Struthers, Wells & Co 20
5.	Sturtevant, B. F., Co 9
5	C NAME OF
b	Sullivan Machinery Co 17
6	Sweetser, Wm. A 10
3	Sword, P. L., & Son *
K	T
)	Talbott & Sons 19
ŝ	Talcott, Ed. N. Kirk 6
ŝ	Taper-Sleeve Pulley Works 9
,	Taylor Engine Co 18
,	Teague & Marye 6
	Texas Coal Tar & Asphaltum Co 31
	Thompson & Campbell 30
	Thurber, C. F * Tifft, Geo. W., Sons & Co 18
	Tifft, Geo. W., Sons & Co 18 Todd Pulley & Shafting Works 48
	Toledo Cornice Works *
	Toledo Machine & Tool Co 10
	Toledo Wire & Iron Works 41
	Toomey, Frank 25
	Trench, Daniel G., & Co 27
	Trenton Iron Co
	Trevor Mfg. Co 36
	Tucker, Irwin
	Tunis Lumber Co 24
	Trevor Mfg. Co
	1.
	Union Muning Co.
	Union Foundry & Machine Works. 16 Union Mining Co
	U. S. Machine Co
	U. S. Machine Co
1	1.
	Valk & Murdoch Iron Works 20 Valley Iron Works 19
	Valley Pump Co
	Valley Railway 38
	Valley Pump Co
	Van Noorden, E., & Co
	Van Winkle Gin & Machinery Co 9
	Virginia Paint Co
	Virginia Paint Co
	Vulcan Iron Works Co 4
	241
	Walker Mfg. Co*
	Walker E. Tool Co. *
	Waltham Emery Wheel Co 34
	Walker Mig. Co
	Warfield, S. D., Co
1	Washington Hyd. Press Brick Co., 32 Washington, La
	Waters & Garland
1	Waters & Garland. 34 Watson, H. F., Co. 21 Webster, Camp & Lane Mch. Co. 18 Webster Mfg. Co. 4 Webster, Warren, & Co. 10 Weir Frog Co. 4 Weisel & Vilter Mfg. Co. 30 Weller Mfg. Co. 35 Wells Rustless Iron Co. 9 West & Branch. 9
	Webster Mfg. Co 4
	Webster, Warren, & Co 10
r	Weisel & Vilter Mfg. Co 30
	Weller Mfg. Co
	West & Branch
	Western Maryland Railroad 39 Whaley W. R. Smith
	Whaley, W. B. Smith
1	Wheeling & Lake Erie Railway 38
1	Wheland's Foundry & Mch. Wks 27 White, Jno. A., Co
	Whitinsville Spinning Ring Co
	Whitman & Barnes Mfg. Co 8 Whitney, A., & Sons
	Whitney, R. M
1	Williams Bros
	Williams, John L., & Son 23
	Williams Mfg. Co 10 Williams, W. J 24
	Williamsport Machine Co 37
1	Williamsport Wire Rope Co 13 Wilson & Huggins
	Wolf, Fred W., Co 30
	Weller Mig. Co. 35 Wells Rustless Iron Co. 9 West & Branch. 9 West & Branch. 9 Western Maryland Railroad. 39 Whaley, W. B. Smith. 6 Wharton, M. F. 24 Wheeling & Lake Erie Railway. 38 Wheland's Foundry & Mch. Wks. 27 White, Jno. A., Co. 37 White, Jno. A., Co. 37 Whitinsville Spinning Ring Co. 8 Whitimsville Spinning Ring Co. 8 Whitman & Barnes Mfg. Co. 8 Whitney, R. M. 29 Williams Bros. 40 Williams, John L., & Son. 23 Williams Bros. 40 Williams, John L., & Son. 23 Williams Mfg. Co. 10 Williams, John L., & Son. 23 Williams Mfg. Co. 10 Williams, W. J. 24 Williamsport Machine Co. 37 Williamsport Wachine Co. 37 Williamsport Wire Rope Co. 13 Williamsport Wire Rope Co. 36 Wood, G. T., Mfg. Co. 6 Worthington, Henry R. 22 Wyckoff, A, & Son. 48
	Wyckoff, A., & Son 48





General Electric Company.

EDISON

THOMSON-HOUSTON SYSTEMS

LIGHT AND POWER.

ISOLATED PLANTS FOR INCANDESCENT AND ARC LIGHTING IN HOTELS, THEATRES, MANUFACTORIES.

STATIONARY ELECTRIC MOTORS for Driving Machinery.

MILLS, SHOPS, FACTORIES LIGHTED BY CUR LAMPS AND OPERATED BY OUR MOTORS SHOW MOST PROFITABLE RESULTS.

SEND FOR OUR ILLUSTRATED CATALOGUES.

BRANCH OFFICES:

620 Atlantic Avenue, Boston, Mass. 173 and 175 Adams Street, Chicago, Illinois. 264 West Fourth Street, Cincinnati, Ohio. Gould Building, Atlanta, Georgia.

12 Broad Street, New York 509 Arch Street, Philadelphia, Pennsylvania. 401-407 Sibley Street, St. Paul, Minnesota. Masonic Temple, Denver, Colorado,

15 First Street, San Francisco, California.

HEISLER ELECTRIC CO.

Manufacturing and Constructing

ELECTRICAL ENGINEERS,

Transformer and Direct Current Apparatus. Lamps



[†])istance eries Incandescent Apparatus. Motors for Alternating and Direct

PHILADELPHIA.

STORACE BATTERY

WORKS: GLOUCESTER CITY NEW JEPSEY.

Current Circuits.

INSTALLATIONS FOR ALL SERVICES.

ENGINES BOILERS and PUMPS.

THOMSON-HOUSTON, EDISON, WESTINGHOUSE and Standard Makes always

Electric Light and Steam Plants Bought and Sold.

THE JOHN E. BECCS MACHINERY & SUPPLY CO., 74 Cortlandt Street, NEW YORK.

3 0 - JOHN SIMMONS COMPANY, ---

STEEL AND IRON

Poles and Brackets for Electric Railways,

Wrought, Cast Iron and Steel Pipe and Fittings.

Supplies for STEAM, WATER, GAS, OIL AND ELECTRIC ENGINEERING. 106-108-110 Centre Street, NEW YORK.

DYNAMOS.

Write for Catalogue and Prices.

REVISED.

MOTORS.

Rockford, III. ROCKFORD ELECTRIC MF'G CO.,

ENLARGED. ENTIRELY REWRITTEN

A DICTIONARY OF ELECTRICAL WORDS, TERMS & PHRASES.

By EDWIN J. HOUSTON, A. M.

"The most valuable of any single book belonging to the literature of Elect-

560 Large Octavo Pages. 570 Illustrations. Price, 85.00.

An Indispensable Reference Book, not only for Electricians, but for Every One Interested in Current Progress.

Some idea of the scope of this timely and important work, and of the immense amount of labor involved in it, may be formed when it is stated that it contains definitions of about 3,000 distinct WORDS, TERMS or PHRASES.

The Dictionary is not a mere word book. The words, terms and phrases are invariably followed by a short, concise definition, giving the sense in which they are correctly employed and a general statement of the principles of electrical science on which the definition is founded.

As one feature an elaborate system of cross relevances has been adopted, so that it is an way to find the definitions as the words, and altases are readily detected and traced.

The typography is excellent, being large and bold, and so arranged that each word catches the eye at a glance by standing out in sharp rebel from the bage.

Copies of Houston's Dictionary, or of any other electrical work published, will be mailed to any address in the world, postage prepaid, on receipt of jurice. Remit by P. O. Order, Frant, Begistered Letter of Express, and address

THE MANUFACTURERS' RECORD, Baltimore, Md.

THE FIRST SYSTEMATIC TREATISE ON THE ELECTRIC RAILWAY

THE ELECTRIC RAILWAY IN THEORY AND PRACTICE.

By O. T. CROSBY and DR LOUIS BELL.

Covering the General Principles of Design, Construction and Operation.

Octavo, 400 Pages and 179 Illustrations, Price, 82.50.

TABLE OF CONTENTS: Chapter I. General Electrical Theory. II. Prime Moyers. III.
Motors and Car Equipment. IV. The Line. V. Track, Car Houses, Snow Machines. VI. The
Station. VII. The Efficiency of Electric Traction. VIII. Storage Battery Traction. IX. Miscolaneous Methods of Electric Traction. N. High Speed Service. XI. Commercial Considerations.
XII. Historical Notes.

APPENDICES: Appendix A. Electric Railway vs. Telephone Decisions. Entractions in
Limemen. C. Engineer's Log Book. D. Classification of Expenditures of Electric Street Railways. E. Concerning Lightning Protection, by Prof. Elihu Thomson.
In this important new book just issued will be found a full discussion of the principles, apparatus and methods of construction employed in electric railroading. As will be seen from the table
of contents, it treats all departments of the subject as comprehensively as is principally to volume
of reasonable size. The illustrations have been prepared especially for it, and many of them are
entirely new. To Electric Railway Managers. Superintendents, Electricions and Operators, this
volume is invaluable while no one interested in the modern applications of electricity will want to

ume is invalidate while no one interested in the manery applications of electricity without it. The necessity for such a book has been keepily felt.

Copies of The Electric Rathway in Theory and Fractice, or any other Electrical republished, will be mailed to any address, postage prepaid, on receipt of price. Address

THE MANUFACTURERS' RECORD, Baltimore, Md.



WALLWORK & WELLS' PATENTS. (Registered Title.)

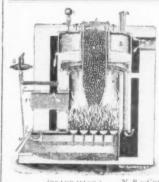
OVER 1,000 SOLD. BOO AND 2,000 GANDLE-POWER

Adapted for iron and steel works, foundries, boiler shops, bridge iders, railroads, quarries, contractors, logging, etc., etc. Used by sert Poole & Son Co., Cliffon Iron Co., Longdale Iron Co., Pulakin Co., old Dominion Iron & Nail Co., the Glamorgan Co., N. & W. R. and C. & O. R. R. For descriptive circular address

KEEGAN & HALPIN,

44 and 46 Washington Street,

Fuel Gas Producers. Architectural Iron Work, Sidewalk Lights, Steam-Heating Apparatus.



THE DUNNING Patent Wrought-Iron Boiler

WITH SELF-FEEDING COAL MAGAZINE

easure Steam or Hot Water Heating, and insures on house night and day. Over 15,866 in use, seps steam up constantly. Also steam engines and hollers of all kinds, and machinery generally. Manufactured by the

NEW YORK CENTRAL IRON WORKS COMPANY,

36 Exchange Street, Geneva, N. Y.

ATION PURIFYING OF WORK ROOMS A SPECIALTY.

PATENTS

CEORGE E. LEMON.

LEMON BUILDING, WASHINGTON, D. C.

Counsellor at Law and Solicitor of American and Foreign Patents.







THE MOORE & WHITE

The MOORE & WHITE CO., 15th & Lehigh Ava., Phila., Pa.

We are lower than the lowest. Having special facilities for finishing Cast Pulleys, we are prepared to quote you figures that will astonish Don't laugh at this statement, but write us and be convinced.

THE J. B. ALLFREE MFG. CO.

12th Street and Michigan Road,

Indianapolis, Ind.



Todd Pulley & Shafting Works,

EAST ST. LOUIS, ILL.

Machine Molded Pullevs, Hangers, Boxing, Couplings Shafting and Gearing.

Contracts Made for Machinery Castings of all Descriptions Write for Prices and Catalogues





INCREASED SALES

JENKING PACKING.

It can be used again and again. Does ROT or BURN our Have you tried it rece

SOMETHING NEW ON LUBRICATION!

Let us send you our new pamphlet on Lubrication It is sent FREE of Charge, and contains Scientific and Practical Information of great

JOS. DIXON CRUCIBLE CO., JERSEY CITY, N. J.



BRISTOL'S PATENT STEEL BELT LACING

IS A GREAT SUCCESS TRY IT AND SEE. SAMPLES SENT FREE. THE BRISTOLS' MEG. CO.

NOTICE! Boring and Turning MICL

BICKFORD, Lakeport, N.

WORKING

PATENTS TRADE-MARKS, DESIGNS, Etc.

AMERICAN SCREW CO.

PROVIDENCE, R. I.

STRONGER THAN A CUT SCREW.
REQUIRES THE USE OF ONLY ONE BIT.
INCREASED HOLDING POWER.
IS COLD FORGED, AND ENTIRE SURFACE HAS A METALLIC SKIN.

SAMPLES SENT ON APPLICATION

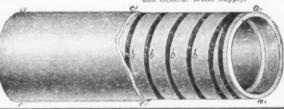
AMERICAN SCREW CO., Providence, R. I.



A. WYCKOFF & SON, 112 E. GHEMUND PL.

DATENT STEAM PIPE CASING

For Cold Storage Pipe and Underground Steam Pipes. afacturers of WOOD WATER PIPE Coal and Iron Mines, Coke Works



Davidson Ventilating Fan Co.

FANS AND BLOWERS.

Adopted by the Thomson-Houston Motor Co., after Exhaustive Tests.

Boston Office: 34 Oliver Street PHILADELPHIA CHICAGO

LEAD WASHERS

They POSITIVELY PREVENT LEAKAGE AND BUST AT MAIL HEAB, thus me PERFECTLY WATER TIGHT JOINT and many threshe job. I for rad disc

Full Size.
CONCAVE.
LITTLEFORD BROS., Successors to
CONCAVE.
HONHORST, LITTLEFORD & CO., Sole Mfrs. 137–141 E. Pearl St., Cincinnati.

LOUISVILLE FIRE BRICK WORKS.

FIRE BRICKS of superior quality. Grate Tiles. S'ove Linings. Ground Fire Clay, Coke Oven Bricks, Cupola Linings. Blast Furnace Linings, and Glass Furnace Blocks a Specialty.

LOUISVILLE, KY.

MOUNT SAVAGE FIRE BRICK. UNION MINING CO.

reprietors of the Celebrated Mount Savage Fire Brick.

Established 1841 Capacity, 6,000 Per Day, 18,000,000 Per Ve
The First Manufactory of its kind in the United States.

Home Office and Works MOUNT SAVAGE, ALLEGANY COUNTY, MD

Granch Offices No. 1 Brondway, New York, N. Y. No. 222 S. Third St., Philadelphia, P.

Block, Pitisburg, Pa. GOVERNMENT STANDARD

HENRY STEVENS' SONS, Macon, Ga.

Sewer and R. R. Culvert Pipe,

Fire Brick, Milled Clay Flue Pipe and Chimney Tops, Urus, &c. Correspondence collected



ASHLAND FIRE BRICK CO., Ashland, Ky.

BRICK

Make a Specialty of Furnace, Rolling Mill and Coke Oven Brick.

WANTED.

TO CORRESPOND with Hardware and Machinery Manufacturers who would be desirous of having ager cy here for the sale of their goods. Have a well established trade now, and facilities for doing large business the coming season.

S. L. MITCHEL, Manufacturers' Agent,

34 Magazine Street, New Orleans, La.

G

.

tole

ati.

Clay,

RD.

Ky.

d be well

XUM